

# MEL FISHER'S TREASURES

## ***Motivation, Inc.***

**Key West - Florida**

*Atocha admiralty claim #75-1416 Civ-Aronovitz (King)*

*Margarita admiralty claim #79-1381 Civ-JLK*

### **Atocha and Margarita Shipwreck Projects**

#### **Master Report**

**Section 5 - 2025 Season Report Update**

**and Request for Renewal of**

**FKNMS Certification #FKNMS-2020-052-A6**

Submitted by Motivation, Inc. January 29, 2026

*(rev-1 TBD, 2026)*

Under Certification by the Florida Keys National Marine Sanctuary

Submerged Cultural Resources

Research & Recovery Certification

#FKNMS-2020-052-A6 (*Atocha & Margarita*)

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# 1 EXECUTIVE SUMMARY

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This document is a Master Project Report for the *Atocha* and *Margarita* Shipwreck Projects with Seasonal Activity Updates submitted from time to time as required to fulfill the reporting requirements of FKNMS Certification #FKNMS-2020-052-A6. This is also an official request for the renewals of FKNMS Research & Recovery certification #FKNMS-2020-052-A6 (*Atocha*) and (*Margarita*), as amended, by Motivation, Inc., the Admiralty arrest holder and FKNMS certification holder. This certification covers the known areas as well as exploratory areas of the wreck sites identified as the *Nuestra Senora de Atocha* and *Santa Margarita*, 1622. These ships were merchant vessels carrying large merchant cargos and part of the 1622 *Tierra Firma Fleet*.

The aim of this document is to update the managers of the Florida Keys National Marine Sanctuary of our work over the last certification period, to continue to build this report into a Master summary document to include the history and highlights of our work conducted over the years prior to the existence of the FKNMS and under these certifications and permits every year since its creation and to request a renewal of our current certification to continue our work for an additional 5 years with seasonal summary type reports done at the beginning of each year for the previous salvage year to be consistent with the timing of our annual Admiralty court reporting requirements. This document will contain much that is a restatement of our last report submission in 2025 which is inclusive of a research design. It should be kept in mind that research designs are documents that state the aims of research, but which must remain flexible to adapt to changing conditions both environmentally and of course the rules and conditions under which we perform our work.

## **SPECIAL NOTE**

Two unprecedented challenges to the past certification periods were faced by Motivation, Inc. in the ongoing Federal Admiralty Court ordered work performed on these important shipwreck sites. One of the challenges took the form of a global pandemic that stifled much in the way of normal activities. This was certainly true for Motivation as well. Quarantines and economics would all play a role in the limited amount of work undertaken during the last few certification periods and continues to have effects going forward. The second challenge pertains to the ongoing litigation and negotiations associated with Motivation's objections and administrative appeal of the Florida Keys National Marine Sanctuary permit and certification "Terms and Conditions" starting in 2019. The new "Terms and Conditions" led to contractors pulling out of work on the Projects and therefore less areas were explored, and fewer recoveries were made.

On February 4, 2019, Motivation was issued renewal Research/Recovery of Historical Resources Permits, Nos. FKNMS-2019-052 (*Atocha*) and FKNMS-2019-110 (*Margarita*), to conduct survey, inventory, research and recovery activities in the Florida Keys National Marine Sanctuary ("FKNMS" or "Sanctuary") by the National Oceanic and Atmospheric Administration ("NOAA"), Office of National Marine Sanctuaries ("ONMS"). Many of the new terms and conditions contained in the February 4, 2019 permits were arbitrary, capricious, unreasonable, and unduly burdensome to Motivation. Indeed, the new terms and conditions made it more difficult for Motivation to conduct the lawful salvage of the *Atocha* and *Margarita* wreck sites as authorized by the applicable admiralty court orders and supervision. Further, some of the new terms and conditions put Motivation's crews(s) and contractors at risk of serious injury.

On March 5, 2019, Motivation filed an administrative appeal with the Acting Assistant Administrator of Ocean Services and Coastal Zone Management at NOAA which is the only recourse available to permit holders who wish to challenge permit requirements, requesting that NOAA/ONMS amend the permits as proposed

therein. Throughout the 19 months of appeal mediation and volleys between the attorneys representing Motivation and NOAA/ONMS/FKNMS, Motivation has been successful in negotiating a number of acceptable permit terms. However, a significant number of unacceptable terms remained unresolved.

On October 26, 2021, the “Final Decision” was issued in the administrative appeal on the FKNMS permits, which constitutes “final agency action” for purposes of the Administrative Procedures Act (“APA”), 5 U.S.C. § 701, *et seq.* The “Final Decision” contained both favorable and unfavorable determinations. The only recourse for Motivation, in order to continue their due diligence and duty to protecting their property as directed by the U.S. District Court for the Southern District of Florida, the most impactful unfavorable decisions were appealed by Motivation to the U.S. District Court for the Southern District of Florida in the matter of *Motivation, Inc. et al. v. Sec. of Commerce, et al.*, Civil Action No. 4:20-cv-10140. Among other issues, Motivation is challenging the Final Decision and actions of the federal and state agencies as violations of the APA by: (1) declaring that the *Atocha* and *Margarita* are “historic properties” under the National Historic Preservation Act of 1966 (“NHPA”), 54 U.S.C. § 306101, *et seq.* over Motivation’s objections; (2) by violating Motivation’s property rights under the Due Process Clauses of the Fifth and Fourteenth Amendments of the U.S. Constitution; (3) by refusing to issue a permit to Motivation for *Margarita* admiralty area within Florida state waters; (4) by refusing to amend the permit(s) to require NOAA to notify Motivation if it conducts or plans to conduct operations that may affect the yet to be recovered *Atocha* and *Margarita* artifacts and materials and to address what NOAA’s responsibilities are if they locate or recover *Atocha* and *Margarita* artifacts and materials; and (5) by requiring Plaintiffs to comply with Florida state regulations for surveying and reporting after the expiration of the SCR Agreement and despite the State of Florida having no jurisdiction over the current *Atocha* and *Margarita* permit areas. The matter is currently pending before the Court. The State of Florida Department of Historical Resources (DHR) defendants initially filed a motion to dismiss Motivation’s Complaint, arguing, among other things, they had sovereign immunity pursuant to the Eleventh Amendment of the U.S. Constitution and were not subject to judicial review under the APA. On February 14, 2022, Judge Martinez issued his order and opinion denying the State of Florida DHR defendants’ motion to dismiss holding that Motivation’s action was not barred by the Eleventh Amendment pursuant to the *Ex parte Young* exception to state sovereign immunity. This decision is significant in that, for the first time, the Florida defendants are subject to judicial review for their cooperation and partnership with the federal government in attempting to limit, water down and oppose Motivation’s ownership and salvage rights to the *Atocha* and *Margarita*. On February 15, 2022, the Florida defendants filed a notice of appeal of this order to the U.S. Court of Appeals for the Eleventh Circuit and requested a stay of the underlying case pending the appeal, which was opposed by Motivation. A stay of the underlying action was granted by Judge Martinez. Prior to the order staying the case, Motivation began to coordinate with the federal government defendants to designate any documents that will be part of the administrative record which contain confidential and/or proprietary information of Motivation to be marked and redacted prior to being submitted to the Court, to protect the sensitive and proprietary location information which is property of the Motivation.

On June 29, 2022, as ordered by the Eleventh Circuit, Motivation participated in a confidential mediation with the Florida DHR defendants, which was productive and resulted in a settlement. The District Court approved a process agreed by the Parties for lifting the stay, remanding the case back to the District Court, vacating the denial of the Florida defendants’ motion to dismiss and for dismissal of the Florida defendants in various orders signed by Judge Martinez in 2023. The settlement agreement, effective upon the Florida defendants’ dismissal from the action on October 11, 2023, largely resolves any of the disputes Motivation had with the State of Florida in this litigation and includes, but is not limited to the following:

- a. Florida DHR will rescind (and therefore takes no position on) its determinations and concurrences that the *Atocha* and *Margarita* are historic properties or eligible to be listed as historic properties under the National Historic Preservation Act of 1966 (“NHPA”), 54 U.S.C. § 306101, *et seq.* and that Section 106 of the NHPA applies to the *Atocha* and *Margarita* shipwrecks within the FKNMS;

- b. Florida DHR will rescind (and therefore takes no position on) its determinations and concurrences that Motivation's salvage activities will "adversely affect both historic properties by diminishing their integrity" and that Section 106 of the NHPA applies to the *Atocha* and *Margarita* shipwrecks within the FKNMS;
- c. Florida DHR will rescind (and therefore takes no position on) its demand for unredacted reports containing proprietary and confidential information including sensitive coordinate data regarding Motivation's salvage activities pursuant to the *Atocha* and *Margarita* FKNMS permits/certification for any activities within the FKNMS (redacted copies of such reports can be obtained from Motivation's website);
- d. Florida DHR will rescind (and therefore takes no position on) any demand that Florida standards for archaeological reporting and/or surveying should apply for Motivation's salvage activities within the FKNMS; and
- e. Florida DHR will declare that Florida DHR has no claim or ownership interest over the *Atocha* or the *Margarita* pursuant to Motivation's *in rem* ownership, title, salvage and admiralty rights. Motivation may search for and salvage the *Atocha* or the *Margarita* and all her tackle, armament, apparel and cargo wherever the same may be found without the requirement of obtaining any permits or other permissions from Florida DHR, its successors, and any person or entity acting on its behalf or subject to its control.

The stay was lifted on May 16, 2023. The final and complete administrative record was lodged by the Federal defendants on October 16, 2024 following the Court's September 27, 2024, order granting in part Motivation's motion to complete the administrative record. The District Court issued a scheduling order on October 25, 2024, regarding summary judgment briefing on the remaining legal issues and issued orders on September 29, 2025, and November 14, 2025, requiring the parties to submit supplemental briefing regarding NOAA's ongoing environmental review which will carry the litigation into mid-2026. Motivation and the Federal defendants have fully briefed their respective summary judgment motions and responses.

The parties filed the supplemental briefing regarding NOAA's ongoing and incomplete environmental review under NEPA on December 22, 2025. On January 13, 2026, the Federal defendants then moved to strike Motivation's requested relief, primarily to set a deadline for the Federal defendants to complete their environmental review pursuant to 42 U.S.C. § 4336a(g). It is possible additional briefing on the matter will be ordered by the Court and/or filed by the parties.

Please note that Motivation has spent enormous amounts of time effort and money to protect their property, these 2 shipwrecks, in a very professional way, through legal avenues within Admiralty law, and prior to FKNMS's existence and now have spent additional six years in litigation, paying attorneys, and endless time, energy, frustration and effort to continue our conservation efforts and challenge unfair practices and regulations by our government.

It is Motivation's hope that in the requested certification from the FKNMS for the coming work period will reflect a more reasonable and cooperative stance that the Federal Admiralty Court Orders can be carried out in an efficient and collegial manner.

## 2 INTRODUCTION

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Motivation, Inc., (Motivation) founded by the late Mel Fisher, is the corporate successor in interest of the entity awarded title to the vessels under U.S. Admiralty Law. Motivation is the corporation that is making the request for the certification renewal. Motivation's current President & CEO is Mr. Kim Fisher. Motivation and the companies that preceded it have participated in the recovery of the *Atocha* and *Margarita* for over five decades. Motivation has also held the permits / certifications from the Florida Keys National Marine Sanctuary since the Sanctuary's inception.

Notably Motivation was at the forefront of the formation and implementation of the now expired programmatic agreement in the Florida Keys National Marine Sanctuary. Motivation continues to be active in requesting that FKNMS let Motivation participate in any ongoing reviews and in any new action plans. It is our understanding, that a "new" management plan and Programmatic agreement has been proposed just this month, January 2025, with no request to us, the primary shipwreck salvor in the FKNMS for any input.

Per Federal Admiralty Court Orders Motivation continues to survey, recover, conserve and exhibit the artifacts from the *Nuestra Senora de Atocha, 1622* and the *Santa Margarita, 1622*. Motivation is utilizing new technology and archaeological methodologies in addition to the current methodologies required by the Sanctuary and the Florida DHR, FBAR. Motivation has the equipment, personnel, expertise, funding and desire to conduct ongoing operations on these sites.

As such, it is with continued respect and appreciation for the history of these shipwrecks that we apply for the renewal of our certification #FKNMS-2020-052-A6, the *Nuestra Senora de Atocha, 1622* and the *Santa Margarita*. We also acknowledge the tireless and persistent work of those who have dedicated so much of their lives to the recovery of these wrecks and the archaeological and historical meaning they contain.

## 3 ARCHIVAL RESEARCH

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### 3.1 ARCHIVAL SOURCES

Desk based research has been an integral part of the search for, location of and continued recovery of the *Nuestra Senora de Atocha* and *Santa Margarita*, 1622. The initial archival sources from the Spanish Archival materials and reports are listed here, however, it should be noted that there is an enormous amount of data that has been compiled in the intervening years of various aspects of these shipwrecks. These aspects utilized their own specific sources and in the following we will attempt to enumerate some of the various works that have been produced as a result of the work Motivation, Inc. and its predecessor companies have undertaken on the shipwrecks of 1622.

See our On-Line Public “*Research Archives*” containing the “*Bibliography – Atocha & Margarita, 1622 – Salvage Projects*” for details on archival sources and documents located at:

<https://melfisher.com> under the “Research” section.

### 3.2 RESEARCH RESULTS

Research results are presented in a chronologically arranged narrative of the prehistory and history of the project areas and of the significant historical events or developments (including important individuals and institutions) which are necessary to place sites and properties in historic contexts within the project area. This information can be found in *Appendix-6* of this report, “*The Atocha & Margarita 1622 Projects Time-Line*” and is scheduled to be made available on-line in our New “*Research Archives*”.

## 4 RESEARCH DESIGN

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### *Research design for continued investigations and recoveries on the Nuestra Senora de Atocha and Santa Margarita, 1622*

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#### 4.1 EXECUTIVE SUMMARY

As far as can be determined, this is the first Research Design that has been written for the *Nuestra Senora de Atocha, and Santa Margarita 1622*, at least under the aegis of the Mel Fisher Companies, of which the current certification holder Motivation, Inc., is one. There have been many reports (see attached appendix – 8) and even several graduate and post graduate degrees that had as at least a part of their studies, some in-depth research on aspects of the *Atocha* and collections resulting from the recoveries. As such, this Research Design is almost a “reverse engineering” document. A few things should be kept in mind. The project to recover the *Nuestra Senora de Atocha, 1622* represents nearly a half century of near continuous effort and work on this site. Much of the earlier work that was accomplished on these sites was done in the period before computers and digital formats were available. Much material, both artifacts and type collections as well as the archives of the project are held by the Mel Fisher Maritime Heritage Society. Motivation Inc., (<https://www.melfisher.com>) and the Mel Fisher Maritime Heritage Society, (<http://www.melfisher.org/>) have already presented reports through these web sites and the intent is, over the coming years, to make more of the studies and reports that were done before the digital age available to the public, this will be a continuing process in the coming years.

There has been no formal research design produced for the work undertaken on the *Nuestra Senora de Atocha, or Santa Margarita, 1622*, this is primarily due to two reasons. First, when work on the *Atocha* first started in 1969, it was strictly undertaken as a salvage operation. The aim of the operation was first and foremost the recovery of intrinsically valuable objects. And while archaeological methodologies were beginning to be employed in the late 1970’s and certainly in 1980 when the *Santa Margarita* was discovered, much that is today *Standard Operating Procedures* to record archaeological and environmental data had yet to be developed. In a very real sense, the recovery work undertaken by Treasure Salvors, Inc. and Motivation Inc. followed, adopted, and adapted the evolving archaeological paradigms that developed through the years. Secondly, the requirements for production of Research Designs by the State of Florida under 1A-31 or for that matter the FKNMS Permitting / Certification system is a relatively recent development for the issuance of permits/certifications. By the time research designs had become a requirement, the recovery operations on the *Atocha and the Santa Margarita, 1622* had been ongoing for several decades. During those decades the evolution of methodologies that were employed by the salvage operation underwent drastic changes.

Archaeological precepts and methods began to be utilized in the mid-1970's when Mel Fisher and Treasure Salvors, Inc. brought on its first underwater archaeologist, R. Duncan Mathewson III, was hired and analysis of materials utilizing archaeological methods was employed. The notion that had held sway for many years, that there was no good archaeological information to be had from shallow water, highly dispersed sites began to be rejected in favor of models that were being developed in parallel by Keith Muckelroy in Australia and Duncan Mathewson on the *Atocha*. In the early 1980's, when conservation of artifacts salvaged from submerged shipwrecks was in its infancy, the first trained conservator, Richard "Rick" Murphy was hired and began to employ more robust conservation techniques which continued to be developed through the years with input from conservators the world over.

During the 1980's the first computers combined with digital imagery were utilized to document and track artifacts recovered from the primary cultural deposit of the *Atocha and the Margarita*. On the *Margarita* site a photo mosaic of the extant hull structure was done using both a photo tower and the Rebikoff Pegasus, an early diver propulsion vehicle outfitted with his specialized underwater camera gear. (<https://www.rebikoff.org/history/>) Also, during the 1980's the Mel Fisher Maritime Heritage Society, a 501-c-3 Non-Profit, was formed by Mel and Dolores Fisher to safeguard the permanent collection of *Atocha* and *Margarita* artifacts. In the 1990's the pace of technological development was breathtaking, with the advent of personal computers, GPS, DGPS and WAAS location technologies replacing Loran and Del Norte readings. The efforts of the Mel Fisher Groups both on the *Atocha*, *Margarita* and the 1715 Fleet helped persuade the State of Florida's Bureau of Archaeological Research to begin using these newer technologies.

It was also on July 1, 1997, when the Florida Key's National Marine Sanctuary was established, and the Programmatic Agreement with the State of Florida went into effect. The structure of the FKNMS permits that became utilized was influenced by input from groups that the Mel Fisher organizations had a hand in establishing, the Historic Shipwreck Salvage Policy Council (HSSPC) worked extensively with State and Federal officials to hammer out what was hoped to be the rules and regulations for a cooperative working agreement with both the State and NOAA.

It was only in 2009 that the necessity of having a Research Design became a part and parcel of the FBAR permits under 1A-31 and then the application of the requirements for reporting under 1A-46 were placed in the State permits. By extension the FKNMS in re-issuing a long-standing permit/certification which seeks to combine both the *Atocha* and *Margarita* permits/certification, and as there is currently a re-negotiation of the Programmatic Agreement between the State of Florida and the Florida Keys National Marine Sanctuary, the requirement of reporting under Florida State Statutes 1A-46 is now a part of this. So, to that end a sort of reverse engineering, of a Research Design is hereby offered.

## **4.2 COASTAL GEOMORPHOLOGY AND BARRIER SYSTEM DEVELOPMENT**

The geological foundation of the south Florida ecosystem consists of quartz and limestone with limestone predominating. The quartz element of the sand is the result of sediment drift from the north deposited on intervening troughs (intereefal flats) an ancient coral reef limestone foundation. These sediments are both terrigenous and biogenic in nature, the result of deposition by longshore currents flowing generally west to east in the Keys.

Another geologic feature of the study area is a series of reefs trending more or less in an east west orientation, whose elevation in some cases rise to 3 to 6 feet below mean low water, but whose troughs may be as deep as 20 to 30 feet below mean low water. These geologic features are important factors to consider with respect to the deposition of shipwreck remains in the near shore area.

The coastal barrier shelf was formed approximately 100,000 years ago, and over time has changed very little until the twentieth century when development and stabilization of the natural coastal features as the result of inlet and harbor construction projects. During the historical era, before major settlement in the twentieth century the low-lying Florida Keys barrier shoreline naturally reconfigured in response to the forces of wind, wave, and tide.

The comprehensive natural dynamics of the Keys coastal zone are as follows:

- A. The foundation of this coastal geologic system consists of limestone and quartz with limestone predominating.
- B. The foundation of this system is ancient relict reef.
- C. The barrier system developed through the southward transportation of sand by net north to south longshore currents and deposition in a general line southward from successive tidal inlets.
- D. West of the unstable, shifting sand barrier is a parallel mangrove barrier. Boring log analysis suggests that this extensive growth was periodically destroyed by storm and concomitant wash over, growing back each time in new physical configurations (Hoffmesiter, 1974).

### **4.3 DEPOSITIONAL ENVIRONMENTS**

Similar to land archaeology, archaeologists working underwater must first understand the environmental factors which affect the cultural deposits before they can adequately interpret them in anthropological and/or historical terms. Any management decision involving shipwreck sites must first consider the benthic environments which affect the physical condition of the hull structure and associated artifacts. (Mathewson, 1991). Four major benthic habitats define varying depositional characteristics along the Keys: (Marszaiek, n.d.; Shinn, 1989)

1. Coral Reefs: Reef limestone of different relief and composition colonized by stony corals, gorgonians, sponges, algae and other reef building, benthic organisms. Reef rock rubble and fossilized hard bottom substrate often times associated on the periphery of coral reef systems usually show evidence of net loss of deposits through erosion rather than of accretion.
2. Limestone Bedrock: Exposed flat lying Pleistocene coralline limestone is composed of small corals, gorgonians, sponges, and algae. Locally covered with a thin veneer of sediment and patches of bottom sea grass. The bedrock in the upper Keys is the Key Largo limestone, while in the Middle and Lower Keys is under laid by Miami iolite.

3. Sea grass: Predominantly turtle grass (*Thalassia*) occurs on sediment of varying thickness at depths less than 10' water. Other abundant sea grasses are manatee grass (*Syringodium*) and shoal grass (*Diplanthera*).
4. Overburden Sediments: Deposits vary from thin, muddy deposits to deep sand of over 15' thickness near the outer reef tract. Clean carbonate sands typically occur seaward of Hawk Channel to 60' water depths; mud deposits usually increase landward and throughout Hawk Channel in water depths between 20' to 60'.

#### **4.4 GENERAL COASTAL HISTORY**

The history of the Keys coastal area is closely linked with the wider maritime history of the New Bahama Channel, as well as the native peoples that were indigenous to the Florida peninsula, and later, the early settlers who made South Florida their home in the eighteenth and nineteenth centuries.

#### **4.5 THE PREHISTORIC ERA**

The prehistoric peoples who inhabited the Florida peninsula exhibited a pattern of cultural continuity that evolved slowly over the past ten thousand years; then in the era three thousand – B.C.E. the culture of the pre-Columbian native people of Florida experienced a period of cultural elaboration and diversification. This period of change lasted until the sixteenth century and the arrival of European explorers, and the settlers who later established a permanent presence on the northeast peninsula at St. Augustine in 1565. A generally accepted framework for the pre- historic periods in Florida is:

- Pale-Indian Period – 10,000 to 7,000 B.C.
- Archaic, with Early, Middle and Late Periods – 7 000 to 1,500 B.C.
- Transitional Period – 1,500 to 500 B.C.
- Three Glades Periods, a Glades III from 1200 to 1566, and
- Historic Period -1566 to 1763 (after McGoun, 1993)

During the Archaic Period of native development, the prime accelerator for population growth and cultural change was the gradual warming of the continental climate at the end of the last Ice Age. In the five hundred years from 3,000 to 2,500 B.C.E., the water table rose to the point where the present contours of the Florida peninsula were established. Over this period the boundaries of the Lake Okeechobee and Everglades wetlands systems became stabilized in their present location and

configuration. The expanding system of coastal estuarine wetlands situated between the present barrier islands and the Florida peninsula became a primary area of habitation for the Florida native people. The combination of increased drainage from the wetter interior, and the decrease in sea level rise led to the formation of brackish estuaries, mangrove forests, and tropical marine meadows; a rich coastal habitat capable of supporting ecologically well-balanced animal and human communities (Widmer, 1988).

Three types of native living sites predominate in the prehistoric period. Large, multi- component cultural sites, that exhibit the remains of extensive middens, and a wider range of tools and natural resource remains are always near wetlands and denote large primary living sites or villages. These primary sites in turn are surrounded by smaller special use sites, and yet again smaller sites used by several hunters or gatherers. Examples of such Paleo-Indian sites are scattered throughout the peninsula, but their remains are generally concentrated in the coastal zone. Multi-component sites are usually located in association with shell mound complexes found at the mouths of coastal rivers, and on the barrier Islands. Examples of multi-component mound site complexes may be found at Jupiter Inlet at the mouth of the Loxahatchee River estuary system. Another good example of such a complex is Turtle Mound, on the barrier island north of Cape Canaveral (McGoun, 1993; Rouse, 1951; Widmer, 1988).

The rapid settlement of the Lower Peninsula after the turn of the 19<sup>th</sup> century resulted in the loss of many of these mound complexes, which were utilized for road fill, or bulldozed flat to facilitate construction projects. The foundation of many local communities consists of this material; an existing example is the trailer park complex south of Jupiter Inlet. The Jupiter lighthouse, constructed north of the inlet in the mid nineteenth century, was also built on the remains of a prehistoric shell mound.

## **4.6 SPANISH COLONIAL ERA**

In 1513, Juan Ponce de Leon during his exploration of the Bahamas, and search for the legendary Fountain of Youth made a landfall at some point along the central, or lower southeast coast of Florida. This landing, to replenish water supplies has been variously placed in what is present northern Palm Beach County, or as far north as Martin County. What is known, however, is that the landing was contested by hostile Indians, and Ponce sailed on. This encounter with the Florida natives might have been the first hostile encounter between the Spanish and the Florida natives; the beginning of a series of conflicts that would continue through the Seminole Wars of the nineteenth century (Milanich, 1995). The Spanish also came to the Americas to expand their Kingdom, spread Christianity, and explore for gold and other riches which were badly needed to finance their European wars.

The east coast of Florida saw no permanent Spanish settlement until St. Augustine was founded by Pedro Menendez de Aviles in 1565. Later in the 1560s there were two reported massacres of the Spanish by coastal natives, and in 1565 Menendez attempted to establish a garrison somewhere between Jupiter and St. Lucie Inlets. However, due to hunger, mutiny, and the hostility of the local natives, (the Jega, or Ais), this attempt to garrison the Lower Peninsula failed (Lyon, 1990). In 1517, Hernandez de Cordova sailed up the west coast of Florida on a voyage of exploration and slaving. According to a member of that expedition, Bernal Diaz, a battle ensued. The chronicle of Bernal Diaz recorded the first pitched

battle between the Spanish and a warlike people that controlled the Lower Peninsula, called the Calusa. According to Diaz:

*“The Indians were very tall dressed in deerskin, and carried long bows, good arrows, lances, and a type of sword. They attacked immediately, wounding six of us and I received a small cut. We answered so quickly with sword and fire that they retreated to the aid of their companions in canoes, who were fighting hand to hand with our sailors. Our boat had been captured after four sailors had been hurt and Alaminos had been wounded in the throat. We returned their attack in water more than waist deep and made them abandon our boat. Twenty lay dead on the shore and in the water and we took three prisoners, who died of wounds on shipboard (Diaz quoted in Gilliland, 1989).”*

The Calusa of Mound Key located in Estero Bay, and their Chief Carlos were visited in 1556, by Menendez, and a strong Spanish force, guided by the shipwreck survivor Fontaneda. In his chronicle published later in Spain, Fontaneda describes the propensity of the coastal Indians to seek out shipwrecks:

*“I was two years among the natives” he writes, “on all the coast of which I will speak hereafter, there is no base gold to be found, much less pure, for that which they have is from the vessels which are wrecked in passing from New Spain, and Peru when storms overtake them (Fontaneda’s Journal, Centennial Folio Edition, 1992).”*

Material evidence of an artistically advanced pre-Columbian culture has been archaeologically recovered from the Key Marco area, south of Mound Key. Archaeological remains of the sophisticated Marco culture consist of ornately carved wooden figures, and a canal system dug through the key which provided watercraft access to the protected interior of the key which had become much elevated through centuries of oyster shell deposits (Gilliland, 1989).

It was clear in 1564 that the Calusa were the dominant group in a loose confederation of Florida natives. One clear indication of this dominance was the fact that Fontanada and other Spanish shipwreck survivors were routinely transported to the primary Calusa village at Mound Key by the politically and militarily less powerful tribes, like the Maticumbe’s, who dwelled in the Florida Keys. It is unknown if Calusa dominance extended to the southeast coast, the home of the Calusa contemporaries, the Tequesta. The southeast coast Tequesta inhabited the area from the Miami River north to present Palm Beach County and Palm Beach County. It was Tequesta sites at the mouth of the New River, that Florida archaeological pioneer Irving Rouse excavated after World War II.

North of the Tequesta lived the Jega, in a major village at Jupiter Inlet. It was the Jega people that Jonathan Dickinson and the Reformation shipwreck victims encountered on Jupiter Island in 1696. In

present Martin County, on the St. Lucie River were the Ais, a dominant tribe that controlled the coastal peninsula, and Hutchinson Island north to Cape Canaveral. At the time of the Reformation shipwreck, it was the Ais that dominated the Jega. Eugene Lyon describes the Ais in 1565, as encountered by Menendez.

*“The Spaniards had also entered a very different cultural area of the Florida Indians. The people who lived in this area, (present Hutchinson Island south of the Cape) were called the Ais, had built a long and stable culture organized almost entirely around the sea. Their life was sustained by turtles, fish, and shellfish from the river, inlets, and ocean. Over twenty years of acquaintance with Spanish shipwrecks along the coast had accustomed the Indians to the taking of white prisoners and the salvage of ships. By 1665, they had already built a reputation for ferocity and cruelty which compelled the advancing Spaniards to move with caution (Lyon, 1990).*

During the sixteenth century, the southeast coast Tequesta may be compared in lifestyle and ferocity to the Calusa, and Jega. Their possible dominance by the Calusa of the southwest coast, and the central coast Ais, may well have had more to do with demographics and the number of warrior’s individual tribes could put into the field, rather than the individual tribe’s warlike nature. The ability of the various coastal estuary systems to support population growth, and the number of warriors available for domestic warfare was the key to tribal dominance.

It is safe to say that the hostile natives that Ponce de Leon encountered in 1513, Tequesta, Jega, or Ais, were as warlike as the Calusa encountered by Diaz twenty years later. In 1565, both Menendez and Fontenada bore witness to the Florida native’s propensity to raid shipwrecks, and take shipwreck victims captive (Lyon, 1990). This was also true a hundred years later, at the end of the seventeenth century as supported by Jonathan Dickinson’s Journal (Dickinson, 1696). What the Florida natives had learned over two centuries was that they were no match for armed Spanish forces. This was evident in the aftermath of the Spanish 1715 fleet disaster. The armed survivors of the six 1715 shipwrecks experienced no hostilities from the warlike central coast Ais (Burgess & Clausen, 1976).

By the middle of the eighteenth century, the original Florida Indians had been decimated by warfare and disease – few remained. Late in the eighteenth century the British carried out an extensive mapping survey of the Atlantic and Gulf coasts of the Florida peninsula. The Bernard Romans chart of 1774) has no annotations for any coastal sites inhabited by native people, only the shell mounds where villages had been previously constructed.

## 4.7 SPANISH FLORIDA ATLANTIC MARITIME ACTIVITIES

By 1568, conflicts with the French and Native Americans resulted in the destruction of all the outposts and settlements except for those at St. Augustine, San Felipe, and Carlos, renamed San Antonio. Though the southeast coast of Florida was ignored by settlers, it continued to be of keen interest to Spanish mariners. Because of climatic conditions in the Caribbean, the possession of Florida ultimately became of utmost importance to Spanish maritime intercourse in the region. The prevailing winds and currents were such that incoming vessels from Europe invariably entered the Caribbean through the Windward or Leeward Islands.

These same winds and currents, however, made exiting the Caribbean by the same route particularly arduous. The only alternatives were to beat northward and sail through the Greater Antilles to reach the Atlantic, or to continue in a northwesterly direction through the Yucatan Channel. This led to the Gulf of Mexico, where the Gulf Stream bore vessels through the Straits of Florida and into the Atlantic (Bass 1988:85). When the focus of Spanish New World activities shifted from the islands of the Caribbean to mainland Mexico in the first part of the 16<sup>th</sup> century, the latter route became preferred.

Spanish captains eventually learned how to take advantage of the prevailing winds and currents, but the early voyages were trial and error and often ended in catastrophe. Spanish seafarers frequently found themselves trapped by hurricanes in narrow cuts, tossed upon uncharted reefs, and hurled onto vast sandbars. These and other perils took a tremendous toll on Spanish shipping in the New World. As the treasure *flotas* left Mexico and Havana on their yearly voyage to Spain, they sought the Florida Straits and Bahama Channel. This route connected the fleets with the prevailing westerly trade winds off the Carolinas that carried them home. The seemingly placid Caribbean environment often turned vicious, and many gold-laden ships were dashed on the reefs and shoals in violent hurricanes such as that of which the *Atocha* was a part in 1622, which wrecked some 8 galleons along the Florida Keys reefs.

When Spanish ships piled up on the reef, the natives would paddle out to investigate. If there were survivors, they usually killed or enslaved them. Gradually, through contacts with fishermen from Cuba, they grew less hostile to the Spanish but remained a threat to other castaways. Fontaneda's narrative of his experiences as a captive of the Keys natives indicates that they were experienced shipwreck plunderers by the middle of the 16<sup>th</sup> century. He wrote that the natives of the Keys were "rich; but in the way that I have stated, from the sea [wrecks], not from the land." When English privateer ships under Christopher Newport stopped in the Keys for water in 1592, the natives of Matecumbe traded gold and silver items they had taken from shipwrecks for sailors' rusty knives. A French priest, shipwrecked in the Keys in 1722, concluded that the only reason the natives stayed on the barren key he landed on was to plunder shipwrecks (Viele 2001).

Due to an increase in the volume of shipping and attack from her European neighbors, Spain eventually decided to organize a convoy system – the so-called *New World fleets*. Beginning in 1543, Spain dispatched two major fleets to the Indies each year. One sailed in April or May destined for Vera Cruz, terminus of the treasure trail leading from the Mexican highlands. Known as the *New Spain Fleet*, it was accompanied by ships bound for ports in Mexico, the Greater Antilles, and along the coast of Central America. There were often as many as 30 vessels in this flotilla. The second fleet, called the *Tierra Firme Fleet*, sailed in August, and carried goods consigned for Panama and the Spanish Main. The outward-bound manifest of both fleets usually consisted of consignments of Old-World products – wine, olive oil, manufactured goods such as iron, glass, books, paper, clothing, and utensils to Spanish settlers in the New

World. Heavily armed galleons or warships were stationed at the fringes of the fleet in case of attacks by privateers or pirates (Clausen 1965:5). Perhaps the best known of these fleets become notable not for succeeding in their voyages, but for their demise. The earliest fleet to wreck was the 1554 Fleet which was lost along what today is Padre Island Texas. The 1622, 1715 and 1733 Plate Fleets, were all destroyed by hurricanes along the Florida coast.

These are the three major losses of Spanish Treasure Fleets known in Florida waters. The Spanish, after the discovery of the “New World” quickly began to understand the weather patterns that predominated during certain parts of the year. They could not, of course, predict with any sort of accuracy the possible formation of major weather systems far out into the Atlantic basin. They relied on portents, both astrological and otherwise to determine when the best time for a Fleet to sail would be. Political and economic pressure from Spain could also determine the departure times for the fleet. Obviously, this sort of decision making was flawed from the start and given these factors it is amazing that more ships were not lost.

## **4.8 1622 FLEET**

The 1622 fleet, after much delay, left Havana on September 4<sup>th</sup>, 1622. Disaster struck the fleet which consisted of 28 vessels at about the latitude of Miami. The Fleet was driven before a savage northeast wind for the majority of the 5<sup>th</sup> of September scattering the fleet along a line 60 miles north of the Cuban Coast. The storm then intensified into a hurricane and in the typical cyclonic motion of such storms, began to come out of the South, forcing the fleet onto the reefs and shallows of the Florida Keys. By midday on the 6<sup>th</sup> the fleet had lost 8 of its vessels including the Capitana and Almirante. Salvage efforts were put together as quickly as possible, but not before another hurricane came through the area dispersing the wreckage further. Salvage was attempted by the Spaniards utilizing the dragging of grapnel anchors, enslaved pearl divers, and diving bell apparatus for many years until they officially abandoned these efforts in 1644 after the passing of Melian.

## **4.9 1715 FLEET**

In 1715, the New Spain and the Tierra Firma combined fleets departed Havana in July. Disaster struck as the fleet, consisting of eleven vessels, was ravaged by a hurricane in the Bahama Channel, destroying all but one of the ships. The demise of the 1715 Plate Fleet represented a tremendous loss to Spain, as the registered cargo of gold and silver totaled nearly seven million pieces-of-eight (Bass 1988:96). Salvage operations on the wrecks commenced almost immediately and continued for several years (Bass 1972:262). It is estimated that almost half of the treasure was recovered by these salvage efforts. One setback occurred not long after salvage had begun. Henry Jennings, a Bermudian captain turned pirate, attacked the Spanish salvage camp with 300 men and carried off an estimated 350,000 pieces-of-eight (Clausen 1965:7). Official Spanish salvage was discontinued in 1719, and interest in the wrecks eventually diminished.

## 4.10 1733 FLEET

Disaster struck the home bound Plate Fleet a second time within two decades. Once again, the combined Spanish fleet left Havana, this time in July 1733. The newly constructed *Capitana El Rubi Segundo* led the convoy, which consisted of three other armed vessels and eighteen merchantmen (Bass 1988:96). Two days after their departure, the fleet encountered a hurricane near the Central Florida Keys, destroying eight galleons and thirteen other vessels (Bass 1972:263). As before, only one vessel, *Nuestra Senora del Rosario*, survived to report the loss to Havana.

The Spanish commenced salvage operations almost immediately, which lasted several years. Vessels not easily raised were torched and burned to the waterline so that cargoes could be removed. Documents reveal that more material was salvaged than the original register listed, an indication of contraband freight (Bass 1988:99).

By the late-18<sup>th</sup> century, the Spanish began dispatching small sloops to the southwest Florida coast to trade with the natives for seals. They used seal fat to coat the bottoms of their ship's hull to keep ever-present shipworms from devouring the hulls in the tropical waters. During the 1700s, English men-of-war in their global conflict with Spain began passing through the Straits of Florida from their bases in the Caribbean islands. Many English ships were lost in this area such as the frigate *HMS Looe*, which was lost in 1744 in a storm near Big Pine Key – now the site of Looe Key section of the Florida Keys National Marine Sanctuary. In the 1770s, Key West [originally Cayo Hueso] was a customary watering stop for ships transiting the Gulf of Mexico and the Atlantic Ocean. However, significant island settlement did not occur until after the War of 1812.

All sorts of colonial period ships used the maritime highway of the Bahama Channel, many of these were lost along the shallows of the Florida Keys. One such vessel found by Treasure Salvors, Inc., in the 1970's during the search for the *Atocha* was that of the ***Henrietta Marie, 1700***, a ship that had been taking part in the shameful trade in slaves lost on today's "New Ground" reef area. This wreck discovered by the salvage team has been to focus of both an individual master's degree, books and documentaries and is part of the permanent displays at the *Mel Fisher Maritime Heritage Museum*. It is one of the more studied slave ships in the FKNMS waters and continues to educate and inform visitors and scholars about this sad period of history.

The decline of the Spain's New World Empire was a gradual process. Florida had never been the focus of Spanish activities. Nonetheless, it had acted as the northeast border of the empire for nearly two hundred years before it was finally ceded to the British at the conclusion of the French and Indian War [1756-63]. During Britain's possession, Florida increased in both population and wealth. Commerce grew and relations between Florida and the other southern colonies were established. However, with the outbreak of the American Revolution in North America Florida found itself alone in its allegiance to the crown. Great Britain also found itself once again pitted against its adversaries, France, and Spain. The United States had negotiated an alliance with France in 1778, followed by a comparable document with Spain a year later. During the war, Spain captured British "West Florida," with its capital at Pensacola. The treaty executed after the war granted Spain the remainder of Florida.

Florida remained officially under Spanish hegemony until 1819, when it was sold to the United States. During this second Spanish period, Florida was heavily settled by Americans, as the Spanish offered inducements in an effort to resettle abandoned British plantations. Spanish authority in Florida slowly waned until eventually, on 22 February, 1819 it was sold to the United States for five million dollars. The United States officially united the two provinces into a single territory and assumed control in 1821.

## 4.11 FORGOTTEN BY TIME

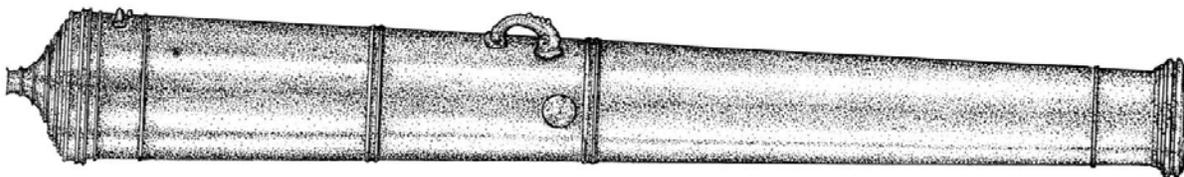
1622, 1715, 1733, These three fleets of shipwrecks remained basically lost to history until the advent of SCUBA and the early use of metal detection equipment developed during WWII and the diligent exploration and salvage by modern day Historic shipwreck salvors. Mel Fisher was one of the first successful “Treasure Hunters” who began full time shipwreck salvage in the early 1960s through 2009 on the 1715 Fleet, mid 1960s on the 1733 fleet, and late 1960’s and to date on the 1622 Fleet.

## 4.12 GENERAL SITE DESCRIPTIONS

### 4.12.1 *Nuestra Señora de Atocha Site*

Motivation Inc. and its predecessor company, Treasure Salvors Inc., has for over five decades pursued the scattered remains of the *Nuestra Señora de Atocha*, 1622. One of the fundamental questions regarding the highly dispersed nature of this shipwreck is, “are these remains all from the same vessel?” The answer to this question lies in the wrecking and site formation processes that affected the shipwreck during the first hurricane and then the second storm. The *Atocha*, as we know from the archival documents was relatively intact after the first hurricane, sitting on the seabed in 55 feet of water. The second hurricane that took place a few weeks after the initial sinking were the causal factor for much of the scatter pattern that we see today.

After the initial sinking and as the second storm affected the wreck, the ruptured and weakened upper hull structure of the *Atocha* tore away from the bottom depositing an enormous amount of the bulk cargo that was carried at the site that is now referred to as the primary cultural deposit or PCD. Without this heavy cargo and most of the ballast the *Atocha* became buoyant enough to begin a miles long track to the northwest leaving a highly scattered and attenuated trail of material in its passage. At the base of what is referred to as the “coral plateau”, the hulk of the *Atocha* encountered a significant



geological and hydraulic boundary. It was here in 1975 that Dirk Fisher discovered nine bronze cannons

with markings that could be confirmed as having been on the *Atocha's* manifest. At this point the scatter of the artifact trail makes a shift to a more northern direction. This was most likely due to two major factors, the lightening of the remaining wreckage due to the cannons breaking loose and the wind shifting as the storm moved past. Across this plateau other items were recovered: four silver bars and 22 sections of a gold belt that was set with diamonds rubies and pearls and a huge length of large link gold chain. These finds led to the enormous shifting sand area known as the Quicksand's.

The "Quicksand's" are where the first evidence of the *Atocha's* wreckage was located in the early 1970's. The southern end of these sand banks was an area that the divers of that time dubbed the "Bank of Spain". Included in these finds were thousands of silver coins, gold bars, gold chain and a galleon anchor. These initial finds were of course recorded using the technology available at the time. Since then, technological developments have allowed for much more precise mapping of each artifact that is recovered.

From 1972 through 1985, there was a continual search for the main section of the *Atocha*. The understanding of the wreckage pattern was a long slow process. Partially due to the fact that the *Atocha*, as we now know scattered over many miles. The initial finds in the Quicksands, led Mel Fisher, and many others to believe that the major portion of the shipwreck would be found in that area. Many of the tell-tale signs were there. Anchors and treasure of varying sorts, small weapons such as arquebus and swords, there were personal jewelry items and there was some ballast. But the major cargo, near 30 tons of silver continued to elude the teams. This long search is partially the fault of the technology available at the time and we can only speculate if modern location technology and the GIS type programs that we now use would have shortened that time.

Finally, in 1985, miles from the original finds in the Quicksands, the "Motherlode" would be found. The location, excavation, and recovery of the primary cultural deposit or PCD of the *Atocha* was a massive undertaking, but the area of wreckage represented by the artifacts in the Quicksand's and the long-attenuated trail between them continued to be intriguing. After the inventories were completed from the PCD finds, it was discovered that there was still a significant amount of cargo missing from the listed manifest, which included approximately 50,000 silver coins, 300 silver bars, 10 bronze cannons, much of the manifested gold, an unknown quantity of personal wealth represented by chests brought aboard by the wealthy passengers, and at last but not least a substantial shipment of religious type artifacts ( based on Gene Lyon's research ).

The types of artifacts associated with the Quicksand's area include gold bars, gold chains, religious artifacts, and a scattering of silver coins that have all been found along the northwest trail. The interesting thing is that from the "Bank of Spain" area of the Quicksands we seem to have two trails leading away, one of which is to the north. This northern track in 1984 produced the tenth bronze cannon and two galleon anchors, one of which was broken. Very few gold and silver artifacts have been located along this trail. The other more northwesterly track, however, has produced numerous extremely valuable items, gold bars, gold chains, the bishops cross and silver and gold coins to name a few. The overwhelming evidence is that by the time she reached the "Bank of Spain" the *Atocha* had already lost a significant amount of ballast, several of her cannon and all her masts and rigging when she encountered yet another geological boundary. For many years an area at the south end of the Quicksands trails was a source of some confusion. It was referred to as the mystery ballast area, as there seemed to be much ballast there but little other material. We now postulate that it was here that the remains of the *Atocha*, after travelling miles across the Hawks channel, pushed up and across the Coral Plateau, encountered the sand banks and

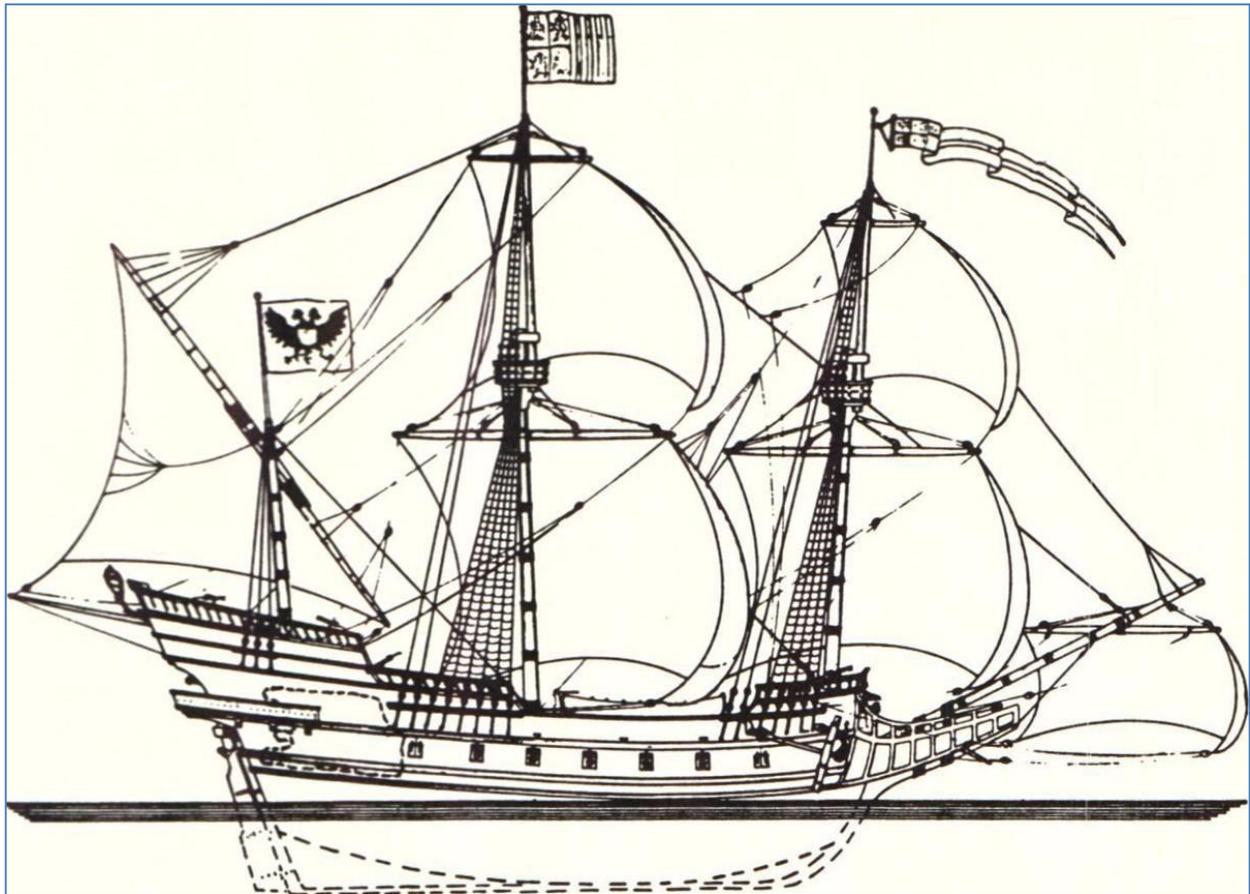
began breaking into at least two major sections, represented by the two known tracks the large dump of ballast here then is likely what was left of this important component of the pre-wreck *Atocha*.

At this point she was driven into the shallow shifting sand bars, which is the southern edge of the Quicksands. Here the *Atocha* literally split into at least two major sections; one being carried to the north, most likely a section of the bow and the gun deck. The remaining lower hull and stern castle, with its associated riches followed a different track and proceeded to the northwest depositing a significant but scattered trail of material along the way to its final resting places. The northerly trail has produced artifacts associated with the forward section of the ship and the gun deck. The northwest trail to the contrary has produced artifacts associated with the stern and lower decks.

When the question is asked, “how do we know that these items are part of the *Atocha*?” We must look at the overall relationships between the various parts of the site; the contextual relationships of the artifacts being recovered, and in a sense place them back aboard this vessel in areas where certain types of activities and human behaviors can be expected. Although other vessels from the 1622 fleet have yet to be found no evidence of a separate vessel has been encountered and none carried the type of cargo, we are finding in a scattered but continuous trail from the remains of the one vessel, the *Nuestra Señora de Atocha*.

***NOAA and the Florida Keys National Marine Sanctuary have long recognized that the U.S. District Court for the Southern District of Florida, in Admiralty, having retained jurisdiction to protect the valid ownership and salvage operations of Motivation, Inc., has directed Motivation to continue in its appointment as substitute custodian of artifacts yet to be discovered and recovered and retains jurisdiction to protect the valid in rem ownership by Motivation, of the wrecked Spanish Galleon NUESTRA SENORA DE ATOCHA and all her tackle, armament, apparel and cargo including the vast amount of smuggled cargo wherever the same may be found and that the U.S. District Court for the Southern District of Florida, in Admiralty will adjudicate its claim to title of the property recovered on a periodic basis.***

#### 4.12.2 Specifications of the Nuestra Senora de Atocha (Updated 2025)



Plan view of the Atocha, by William Muir

**What was this famous treasure ship, where was it built, what was its size and what were the components of the structure of the ship?**

#### **A Little History**

By James Sinclair

The *Atocha* was a classic galleon style vessel, the name is thought to have developed out of the same Venetian root word for an oared vessel "*gallioni*": (we know them as gallies). These oared vessels were used predominantly as river craft as the oars allowed them to move against a current.

The galleon was developed out of the earlier vessels known as "Carracks," these vessels were used in the Mediterranean in the 15<sup>th</sup> Century. These would evolve over time and with the influence of Spanish and Portuguese naval officers and shipwrights into the classic gallions used in trade with the New World in the treasure fleets. While most galleons built were around 500 tons, there were exceptions. Galleon style vessels used in the Manila Galleon trade could reach as much as 1000 tons.

The *Atocha* was one of 4 galleons built under a contract issued in 1616 to the shipwright, Alonso Ferrera. Under the terms of the contract, the galleon was supposed to be completed in 1619, however,

the *Atocha* was not delivered on time and the penalties for the delay were costly. Capt. Ferrera would rush to finish this last vessel, and archaeological evidence points to the fact that corners were cut. An example of this was that each joint of the ship was supposed to have three iron fasteners and one wooden dowel (known as a trunnel). When the remaining structure of the *Atocha* was located under the primary cultural deposit, it was found that at the joints of the timbers there were three fasteners but no trunnels. One conjecture is that possibly this rushed build, and the corner cutting was a contributor to the fate of the *Atocha*.

The Galleons to be built under this contract were all to be 500 tons and to be built in Havana, Cuba. They were to be 110 feet in overall length, 33 feet wide and have a draft of 14 feet of water. They would be square sail on the fore and main masts and a lateen mizzen. The ships would set a spritsail on a massive 75-foot bowsprit and each hull featured the iconic sterncastle. The armament of these floating fortresses and weapon carriers would be 20 to 24 bronze cannons placed along the gundeck, which was the deck below the weather deck. Each ship would have 5 large anchors and one smaller one. Each was to have a small “launch” style tender boat and a full set of sails and rigging.

During the recovery of the ship’s timbers, tests were performed to ascertain the type of wood used to build the galleon. It turned out to be a tropical hardwood species of Cuban mahogany.

Captain Ferrera placed orders for various ships supplies from all around Europe, including ships fasteners and anchors from Vizcaya, Spain. For spars and rigging lines, he placed orders to both Germany and Flanders. For bronze cannons he places order to the House of Trade in Seville, Spain.



*Galleon Andaluçia, modern recreation*

Ferrea would turn over last ship of the four ships built under this rushed contract to deputies of the Spanish crown on August 16, 1620.

The maiden voyage of the *Atocha* was not without some major issues. In 1620 after leaving Havana for Spain and while still in the Bahama Channel, the *Atocha* had to turn back to Havana because of severe damage, caused by a shattered mainmast.

Fleet officials would charge Ferrera with using inferior materials and Ferrera would be forced to provide a new main mast, and in late 1620 the *Atocha* set sail once again for Spain. By the time the *Atocha* made port, major repairs were necessary due to leaks developed around the bow during the transatlantic crossing.

The *Atocha* got its name, like most Spanish vessels of the time, from Roman Catholic saints, and the image that would tower over the Sterncastle of this last of Alonso Ferrera’s ships was both a holy name and an image. ***Nuestra Señora de Atocha***.



SAN  
FELIPE

NTRA. SRA. DE ATOCHA.  
*que se venera en el R.<sup>o</sup> Comb.<sup>o</sup> de P.<sup>os</sup> Dominicos.*  
A LA REYNA NUESTRA SEÑORA  
*La dedica D. Juan Caramona. Grabador de Camara de su S.<sup>o</sup> M.*

SAN  
LUCAS

*Grabado por D. Juan Anst. Salvador, y Caramona.*

Our Lady of Atocha was an important shrine in Madrid, that both Kings and Queens of Spain came to for weekly homage.

#### 4.12.3 *Santa Margarita Site (Updated 2025)*

Sailing in the same Fleet as the *Nuestra Senor de Atocha*, was the *Santa Margarita*. Built in Vizcaya by Basque shipwrights, the *Margarita* was a larger vessel at 600 tons as compared to the 550 tons of the *Atocha* and was built specifically for the Indies Trade. The *Margarita* was purchased in Cadiz in 1621 and being a larger vessel, the *Margarita* carried 25 cannons, however it did have an infantry company under the command of Bernal de Lugo.

De Lugo survived the sinking of the *Margarita* and was rescued by a frigate searching for survivors and the wreck sites themselves. Upon being rescued he commanded that a swivel gun be immediately deployed as a weight for a spar buoy to mark the general location of the *Margarita* wreckage as well as that of the *Nuestra Senor de Atocha*. That story can be more fully found on page 158 of this report.

The *Santa Margarita, 1622* like her sister ship in the fleet, the *Nuestra Senora de Atocha, 1622* represents a homogenous collection of 17<sup>th</sup> century Spanish colonial material. The Mel Fisher organization has been working on this site since the primary cultural deposit was found in 1980. Although there have been various contractors through the years the work performed has been overseen by the entities of the Mel Fisher organization and the archaeologists working with them.

The wreck of the *Margarita* has a similar pattern of dispersal as the *Atocha*; however, it is different in a fundamental way. Whereas the *Atocha's* scatter pattern is primarily the result of the second hurricane that struck the area weeks after the initial sinking, the *Margarita's* wreckage track appears to be the result of the first storm.

In 1982 during a magnetometer survey in Hawks Channel, ironically relatively close to where the primary cultural deposit of the *Atocha* would be found, three galleon anchors were located. These anchors were set and had full wooden stocks. The location of these anchors was, at the time, thought to indicate that they were part of the *Atocha's* wreckage. We know today that this is not the case. In fact, the three anchors were set and they all reflect a bearing of approximately 11-12 degrees (which we generally call the 11-degree line). This leads directly to the section of the *Margarita* found by Mel Fisher's team in 1980.

In 1998 three galleon-size anchors were found a further two miles to the north on the 11-degree line. None of these had stocks nor were they set. This would indicate that a section of the *Margarita* carried these anchors along in the final break-up of the vessel.

The 11-degree line is one that we feel represents the initial or primary scatter. The secondary scatter of the *Margarita* appears to run to the northwest on much the same track as the *Atocha's* secondary scatter from the primary cultural deposit up into the Quicksands area. Much can be interpreted from the known areas of the *Margarita* when comparing it to that of the *Atocha's* scatter. The bathymetry in both areas is very similar. While the *Atocha* struck the reef and sank in Hawks Channel, the *Margarita* deployed three anchors in the Hawk's Channel area to keep from going further north into the shallows. These anchor lines parted and the *Margarita* continued its northward progress towards the shallows of the Quicksands where the depth decreases abruptly from 40+ feet to less than 20 feet and quickly thereafter to 15 feet. These sharp rises in the bottom contour are of great interest in the ongoing investigation of this wreck site.

### Historic Documentation *Santa Margarita*

Historic documents are very clear that the *Margarita* broke up into a number of pieces. Salvagers of the period had difficulty due to this fact and that sand covered much of the wreck. In the archival texts we read:

*“The Almirante (Atocha) sank in nine fathoms of water (54ft.) and the galleon La Margarita in five fathoms (30ft.)”*

(Bib. Nac. Sec. De Mans.-Legajo 2463)

A translation from Spanish to English in 1623 related the disaster and the breakup of the *Margarita*:

*“...so that the keel sticking fast with the gusts over great, and the billows extremely raging, the body shivered to pieces, the passengers, when it was apparent, they could not escape, saw as little mercy in the sea, as they had in the wind.”*

(British Museum/ “News of the Week of May 1623” London, 1623-Burney #3)

AGI – Santo Domingo 870 – 27 March 1629 – Francisco Nunez Melian to King:

*“They found the Margarita broken in pieces. Her silver and other treasures mixed in with the ballast and under sand. He says that it had fallen into the quartel and was impossible to recover.”*

According to estimates by Dr. Eugene Lyon, there is still a sizable amount of intrinsically valuable cargo remaining on this site. His estimates are for registered cargo only – Much more may remain in the form of contraband material. Dr. Lyon estimates that there are some 80,000 silver coins, 169 silver ingots, 4 bronze cannons remain and as quoted from his cargo report: “Note: No gold chains were manifested aboard the *Margarita*; the gold chains found on both wreck sites were clearly private funds, for they were all from the Spanish mints.” If this is the case with the registered treasure, there is likely also an important collection of artifacts representing the lifeways of all the classes of people who sailed aboard this galleon. During the surveys and investigations of the *Margarita* site numerous anchors have been located, the count now stands at 14.

Eugene Lyon, PhD helped to locate the general area of the *Atocha*’s sinking due to one of the documents (expense accounts) of the early salvage efforts on the *Santa Margarita*. These documents and the physical evidence seen and/or recovered show a dramatic confluence between the archival documents and the archaeology, one of the hallmarks of the field of historic archaeology.

#### 4.12.4 Fransisco Melian's diving bell (Updated 2025)

Francisco Melian, came from a well-connected family in Madrid and immigrated to Havana, Cuba. By 1619 he was a member of the Havana City council and by 1625, he had obviously been aware of the rich galleons lost off the Cabeza de Marteries (today's Florida Keys) and had obtained a royal license to salvage the wrecks. He dispatched a frigate with Francisco de la Luz as pilot, to start searching for the wrecks. The frigate, its crew and equipment never reached the sites and they ended up lost off the same coastline. Presumably, because he lost his diving equipment, that same winter Melián cast a 700-pound bronze dive bell which measured 48 inches high and 36 inches in diameter at the mouth which was large enough to house three divers allowing them to catch their breath before diving out once more.



Francisco de Ortega 1636

#### **Quote from Archival Sources:**

*Archivo General de Indias, Sevilla  
Escribania, Legajo 1022B*

*“Meanwhile, the winter gave time to be able to continue that which was begun: he had a machine cast, a vessel, a bell which measured 4 ½ palmos [36 inches] at the mouth, or diameter, and six palmos [48 inches] in height, 700 lb. in weight, with two handles on the outside, and convex surface, and 3 portable iron feet, which are fixed in its mouth, in order to fix it on the bottom of the sea, with 3 iron plates within, concave, fixed on that of the outside, where it can go, and a diver goes seated on one plate, putting the feet on the other two, which are in a triangular form, where one may see the sea bottom with much support. Three divers may fit into it.*

*In the beginning, when it falls upon the water, not a drop can come in, until arriving at the sea bottom and resting upon the feet, it receives some, but in such a way that more than the upper half remains empty and full of air, a refuge and breathe [space] of the divers, who go out from it on the sea bottom to work, holding their breath in order not to receive water. And being tired, they return to the bell, where they take new spirit. An admirable natural philosophy of all [those] speculatively known and practiced by few philosophers. And it is the reason that, as it falls upon the waters and its concave space occupies the air, it doesn't permit the water to enter and, in the depth, or on the bottom, since there is no place in which to go out it [the air] is conserved. And since these two bodies [air and water] cannot mix or join together, each one occupies the space to which it pertains – the air the part which it brings, and the water that which it finds unoccupied – a curiosity at which the least envious of knowledge would be pleased to be present at the experience.”*

In 1980, searching in the area where the wreckage of the *Margarita* would be found, Treasure Salvors Inc., found and salvaged a massive copper object that for years was thought to be a “cooking cauldron” for making meals aboard the *Santa Margarita*. However, the more that we learned of life aboard these vessels the less likely it seemed that this could have anything to do with cooking. It was just too big. Cooking anything of course requires a heat source and in this time period, that meant fire. Fire was one of the most dangerous things onboard wooden sailing vessels and the control and containment of fire was of paramount importance. The object that was recovered would have required a bonfire size flame to heat any contents and this is untenable onboard a sailing vessel from this period.

The story of Melian’s dive bell gave new meaning to this artifact and now, over 400 years since the loss of the *Margarita* it is almost certainly a fragment of the dive bell that Melian had made in Cuba specifically for salvaging the wrecks of the 1622 Fleet.



*Santa Margarita Dive Bell fragment*

### 4.13 PREVIOUS WORK ON THE SITES

As previously stated there has been near continuous investigative and recovery operations aimed at the *Atocha and Margarita* for decades. This long work has been an evolutionary process that has developed into today's model wherein the recovery of all data associated with the *Atocha and Margarita*, environmental, cultural, and historical is gathered. The careful recording and the use of digital data has allowed for the development of GIS programs that enhance our understanding of the sites. While the wrecking process is understood in more complete ways, there is still an enormous amount missing from the known merchant cargo and equipment carried aboard the *Atocha* and *Margarita* as well as the unregistered and smuggled cargo that has yet to be found as well as an unknown amount of the personal possessions of the officers and wealthy passengers. Previous reports to the FKNMS have detailed the operations of Motivation through the years. Attached as an appendix, is a preliminary timeline of events, finds and other situations that were part of the story of the *Atocha* and *Margarita*. Both the *Atocha* and *Margarita* investigations and recoveries are a work in process, this timeline includes information from documents, and input from individuals who were directly involved in the events. Documents, oral histories, film documentation are all source material for the development of this timeline (Appendix-6).

### 4.14 OBJECTIVES

The objectives of Motivation Inc., as with its predecessor companies is to comply with the Federal Court Orders to recover, conserve and protect these sites and their objects/artifacts/treasures associated with the *Nuestra Senora de Atocha* and *Santa Margarita*, 1622. Motivation, Inc. will continue to act as substitute custodian of the Court and to do its "due diligence" in all these efforts as we have done for the last 5 decades. It is our intention to continue to do this work as long as the *Atocha* and *Margarita* continue to reveal more of their story and history to us through such work. The *Atocha*, was awarded to Mel Fisher and his company, in 1982 by the US Supreme Court, effectively recognizing that Mr. Fisher was not only the finder of the *Atocha* but also the owner of the *Atocha*. The same holds true for the *Margarita*. Motivation is committed to acting as the Court has ordered and to do so in a "best practices" way going forward.

Our archaeological and historical shipwreck recovery methodology has been and continues to be guided by "best practices" which have been evolutionary in nature since the project began in the 1970's. They are informed and adopted to not only the current "terms and conditions" of the FKNMS and its officials under the "certifications" issued to Motivation, but also and of particular importance, is Motivation's extensive and deep understanding and experience on these two shipwreck sites and the environments in which they occur. At times, the terms and conditions change, often substantially. For example, when new managers take up their respective posts and institute new policies or rules within the FKNMS. This is partially understandable due to the fact that none of the newer managers at the FKNMS field offices or decision makers at NOAA headquarters have any field experience working on these sites, in these environments, or the understanding that our long history gives us having worked on these particular complicated and scattered sites. Motivation, Inc. has the institutional history to continue this work in the best ways possible as well as having a model that provides the financial ability to conduct this work over the long period of time that it has. It is hoped that as the relationship with the FKNMS managers

evolves and a better understanding of what the actual conditions are working these sites, that a collegial spirit can exist and continue to develop.

The continued objectives for these projects is to map and salvage all of the *Atocha* and *Margarita's* tackle, armaments, apparel and cargo wherever they may be found as directed by the United States District Court for the Southern District of Florida, in Admiralty, to return them to the stream of commerce, share them with the world via our public Research Database and recover them before they are lost to the ravages of the sea via in-situ deterioration. This will include manifested artifacts as well as contraband cargo and artifacts that are believed to have been on board these two ships. Based on the ships manifests and the research work done by the Fisher Family, Dr. Eugene Lyon, Dr. Corey Malcolm, Manuel Marcial, Gary Randolph, James Sinclair, Duncan Mathewson and others, below is a list of the approximate armaments and cargo that are yet to be recovered.

*Atocha:*

- 10 Bronze Cannons
- 4 Tons of Cannon Balls
- 264 Silver Bars
- 45,000 – 65,000 Silver Coins
- 111 Gold Bars / Disks
- 140 Copper Ingots
- 60+ lbs. Rough Colombian Emeralds
- An untold number of other artifacts and smuggled items

*Santa Margarita:*

- 80,000 Silver coins
- 169 Silver Bars
- 4 Bronze guns
- 22 Copper Ingots
- An untold number of other artifacts and smuggled items

## **4.15 METHODOLOGY**

The methodologies that are currently in use have been developed through the years. These methods have evolved, and I am sure they will continue to do so as we learn more and as technology continues to evolve. From the way that data is collected to how the collected data is utilized has undergone and still undergoes evolution as computer technology and the software associated continue to develop. While some of these are being undertaken due to the “terms and conditions” set forth in the certification we have from the FKNMS, the majority of the methods we employ are those of our own development and are specific to the type of shipwrecks that the *Atocha* and the *Margarita* are representative of. These computer and software methods are covered in other sections of this

certification report and request, however and more importantly perhaps at this juncture a review of the methodologies we employ to both locate and recover the scattered remains of this important shipwreck. We continue to refine the various remote sensing surveys that have been done in the past by re-confirming readings in areas of interest with magnetometry and side-scan sonar. We are also developing a hybrid vehicle (HAUV) known as "Dolores" named for Dolores Fisher, Mel Fisher's wife. This hybrid vehicle is semi-autonomous and has been tested utilizing a non-ferrous detection device that has the potential to locate the non-ferrous remains of the *Atocha* and *Margarita* in a more efficient manner. We are constantly refining and researching new technologies as they develop.

The excavation techniques for accessing the potential artifacts vary with environmental situations. These range from surface visual inspection to a variety of excavation methods.

- Hand fanning
- Water jet
- Water induction dredge
- Airlift
- Propwash deflection (mailbox)

Each excavation method is useful in various areas across these widely dispersed sites. The one that garners the most attention (albeit negative) is the prop wash deflection method. The fact is that in much of the area of the *Atocha* and *Margarita*, this method is the only rational choice. Where artifacts are scattered not just by a matter of feet but often hundreds of yards over miles of seabed and buried in shifting sand, this method has proven time and again to be the best choice. If an area of concentrated remains such as the PCD (primary cultural deposit) were to be encountered again, this of course would not be the method used. And more "traditional" recovery methods would come into play. The concern of some individuals and entities, while perhaps not entirely unfounded is based mostly on hearsay and conjecture. Prop-wash deflection technique is a tool. One of many, but often it is the correct tool for the recovery of this sort of scattered and buried shipwreck material.

**TABLE 1**  
**PROP-GROUPS**

WATER DEPTH	PROP SIZE (Inches)			
	12"-24"	25"-36"	37"-48"	48"-up
0'-10"	P-1	P-5		
11'-25"	P-2	P-6	P-11	
26'-36"	P-3	P-7	P-12	P-17
36'-46"	P-4	P-8	P-13	P-18
46'-56"		P-9	P-14	P-19
56'-66"		P-10	P-15	P-20
66'-plus			P-16	P-21

Designed by Captain Gary Randolph at Motivation, Inc.

Choose your prop size along the top.  
 Choose your working depth along side.  
 This gives you your prop-group rating.

Apply your prop-group to Table 2 for Maximum Time/RPM range for the bottom conditions on your site.

**TABLE 2**  
**TIME/RPM GROUP**  
**MAXIMUMS**  
 TIME in minutes

PROP GROUP (table 1)	Sea Bottom Conditions									
	Hard Bottom Com. w/ 0'-0.5' overburden	Sand or Unconsolidated Mud				Consolidated Mud *				
		0.5'-2'	2'-4'	4'-8'	8'-more	0'-0.5'	0.5'-1'	1'-2'	2'-more	
P-1	4/800	10/800	4/1200	10/1200	30/1500	50/1500	42/1500	42/1500	42/1500	42/1500
P-2	4/1000	10/1000	10/1200	20/1500	50/1500	70/1500	55/1500	55/1500	55/1500	55/1500
P-3	10/1000	20/1000	20/1200	40/1500	70/1500		65/1500	65/1500	65/1500	65/1500
P-4	20/1000	30/1000	20/1500	60/1500			75/1500	75/1500	75/1500	75/1500
P-5	2/800	5/800	2/1200	5/1200	15/1500	25/1500	22/1500	22/1500	22/1500	22/1500
P-6	2/1000	5/1000	5/1200	10/1500	25/1500	35/1500	35/1500	35/1500	35/1500	35/1500
P-7	5/1000	10/1000	10/1200	20/1500	35/1500	45/1500	45/1500	45/1500	45/1500	45/1500
P-8	10/1000	15/1000	10/1500	30/1500	45/1500	60/1500	55/1500	55/1500	55/1500	55/1500
P-9	10/1200	15/1200	20/1500	40/1500	55/1500		65/1500	65/1500	65/1500	65/1500
P-10	10/1500	15/1500	30/1500	50/1500			75/1500	75/1500	75/1500	75/1500
P-11	2/800	5/800	2/1200	5/1200	15/1500	25/1500	12/1500	12/1500	12/1500	12/1500
P-12	2/1000	5/1000	5/1200	10/1500	25/1500	35/1500	25/1500	25/1500	25/1500	25/1500
P-13	5/1000	10/1000	10/1200	20/1500	35/1500	45/1500	35/1500	35/1500	35/1500	35/1500
P-14	10/1000	15/1000	10/1500	30/1500	45/1500	60/1500	45/1500	45/1500	45/1500	45/1500
P-15	10/1200	15/1200	20/1500	40/1500	55/1500		55/1500	55/1500	55/1500	55/1500
P-16	10/1500	15/1500	30/1500	50/1500			65/1500	65/1500	65/1500	65/1500
P-17										
P-18										
P-19										
P-20										
P-21										

Example: 35/1000  
 Dig 35 minutes at an RPM of 1000

NOTES:  
 \*Digging in consolidated mud must be done at a maximum per dig depth of 0.5' before being checked for artifacts in each layer.

Motivation, Inc. Prop-Wash Table

## 4.16 ARCHAEOLOGICAL & CONSERVATION GUIDELINES AND PROCEDURES

*Motivation, Inc. v2018-12-13*

### **Archaeological Guidelines and Procedures for the Recovery and Conservation of Artifacts from the *Nuestra Señora de Atocha* and *Santa Margarita* Wreck Sites**

The following guidelines have been prepared by Motivation, Inc. for its salvage crews and sub-contractors working under US District Court – Southern District of Florida Court Orders regarding the *Atocha*, i.e., USDC-SDF Case No. 75-1416-Civ-King and related Court Orders and US District Court – Southern District of Florida Court Orders regarding the *Margarita*, i.e., USDC-SDF Case No. 79-1381-Civ-King and related Court Orders, within the Florida Keys National Marine Sanctuary (FKNMS) as described in the FKNMS Programmatic Agreement with the State of Florida (SOF) whereby the FKNMS adopted the SOF Rules for Commercial Salvage as currently stated in F.A.C. Chapter 1A-31 “Procedures for Conducting Exploration and Salvage of Historic Shipwreck Sites.”

These guidelines are also based on the long-standing guidelines had been prepared in accordance with the Settlement Agreement of June 3, 1983, between the Florida Department of State and Treasure Salvors, Inc., Cobb Coin Company, Inc., Salvors, Inc. and its successor, the Mel Fisher Center, Inc. They specify salvage methods and techniques which will guide collection of archaeological information of wreck sites covered in the salvage agreements with the State of Florida.

The purpose of these guidelines is to establish minimum recording standards in order that sound archaeological provenience information can be made available to Motivation, Inc., the FKNMS, the State, and eventually the general public. Generally, the Guidelines are concerned with recording location of excavation activities; provenience of recovered or recorded artifacts; mapping of wreck sites at broad and detailed scales, as appropriate; artifact tagging, handling, security and conservation; and diver safety.

#### **1. DGPS Positioning of Excavations & Recoveries**

No wreckage will be salvaged until each vessel involved with excavation or artifact recovery is equipped with a differential GPS (DGPS) capable of, and calibrated to, receive a three meter or better (less than three meter) geographic positioning accuracy. The DGPS should be using the 1983 North American Datum (NAD83). Motivation, Inc. recommends the use of the US Coast Guards differential beacon located in Card Sound, Florida for the acquisition of real-time differential position corrections. DGPS readings should be taken in degrees, and decimal minutes to the third decimal place (i.e. xx° xx.xxx).

## **2. Data Records**

Each boat must have on board at least one person approved by Motivation, Inc. to perform the following tasks:

- a. How to use and take accurate readings from a DGPS positioning unit.
- b. Understand and use Motivation's approved artifact tagging system, which will allow identification and provenience of all recovered artifacts to be maintained. Use tags in numerical order and affix them properly to each artifact. Safe artifact handling procedures to be used until transfer to laboratory.
- c. Understand and use Motivation's approved data recording system and fill out their Daily Ships Log sheets, which will provide an accurate record of boat location, salvage activities, artifacts recovered by tag number and location, and other useful information.
- d. The Motivation, Inc. archaeology, conservation & curating staff will conduct a training workshop at the beginning of any new salvage vessel and crews' season to instruct captains and crew members in these areas and will be further available throughout the field season to instruct new data recorders, provide refresher training when necessary and assist in data recording.

## **3. Recording Excavation Locations, Contents and Other Significant Bottom Features**

Locations of excavations and other large bottom features will be determined by DGPS position finding equipment. To ensure accuracy of recording excavation locations, the DGPS satellite receiving antenna will be mounted in a standard location on each boat as near to, or preferably over top of the prop-wash deflectors (mailboxes) as possible. DGPS readings are to be collected while the excavation is in progress. Each salvage boat will have and use DGPS. On the Daily Log Sheet form, brief descriptions and tag numbers of all artifacts will be recorded for each excavation unit so that the tag number is sufficient to determine the provenience of any artifact. Representative and all unusual excavation area profiles will be recorded noting the general order and thickness of recognizable sediments and the location of artifacts, fossils or other useful information. Profiles, which indicate that an earlier excavation is being reopened, should be noted. When possible, a more accurate location description for important artifacts should be recorded, for example, in which quarter of the excavation unit and from what sediment. Finally, any interpretations of stratification or association which might be useful in understanding the process of artifact scatter and disposition should be noted.

## **4. Large Non-Structural Artifacts**

Large objects like cannons and anchors will be tagged, left in place on the bottom and their geographic location in Latitude (N) and Longitude (W) recorded so that they may serve as a mapping and location references in future work unless otherwise directed by Motivation, Inc. Director of Operations in consultation with the Director of Archaeology. If such large objects interfere with underwater metal detector survey they may be moved to another location on the site with the approval of Motivation, Inc. Director of Operations providing the original and new locations are recorded on the Daily Log sheets and properly mapped & recording of their in-situ orientation is recorded on a cannon or anchor data sheet.

Cannon, anchors, wood structure and other large objects will not be removed from the site unless transfer, storage, and conservation facilities approved by Motivation, Inc. are available and such activity is approved by Motivation, Inc.

#### **5. Structural Remains and Major Artifact Clusters**

Because structural remains and major artifacts clusters have more important contextual associations than scattered material, greater care is required in recording provenience and direct supervision of all activities around such remains will be conducted and supervised by Motivation, Inc.'s Senior Archaeologist. Structural remains will then be photographed when possible and mapped on base maps supplied or approved by the Motivation, Inc. to show positions of all wooden structural members, spikes, and other artifacts as well as details of construction if visible. Detailed maps must specify the coordinate system (latitude/longitude) and North American Datum (NAD 83) used for compilation. DGPS coordinates (as specified in section 1 above) should be taken as nearly as possible on top of taut buoy lines, which mark mapping reference points (datum's) on the bottom. Structural remains will not be moved or undermined unless mapping results have been approved by Motivation, Inc.'s Senior Archaeologist and unless transfer, storage, and conservation facilities approved by Motivation, Inc. are available.

#### **6. Artifact Tagging**

All recovered artifacts will be tagged individually or as a group when from a single excavation unit except as outlined below. Anchors and cannon recorded and left in-situ will also be tagged. Tags will be plastic with permanent imprinted numbers and affixed to artifacts or bags of grouped artifacts by strong rubber bands, plastic wire ties, or if left in-situ use high test, monofilament, fishing line.

For small or delicate artifacts, the tag may be placed in the same sealed protective container as the artifact. Large objects will be individually tagged. Small objects will be individually tagged if they are unique or have special value. Common objects such as small pottery sherds, barrel hoop fragments, musket balls or lead sheathing can be bagged as a group and assigned a single tag number when from the same excavation unit. Bags will be sufficient strength that they will not tear or break in handling or rot in storage before processing; strong freezer type plastic bags are recommended.

## 7. Artifact Handling

**ALL RECOVERED ARTIFACTS WILL BE KEPT WET AND MUST NOT BE ALLOWED TO DRY OUT WHILE ONBOARD AND IN TRANSIT TO THE STORAGE AND PROCESSING LABORATORY AS DAMAGE TO THE ARTIFACT MAY OCCUR.**

**GLAZED OR BLUE & WHITE TYPE CERAMIC VESSELS OR SHERDS, ORGANIC MATERIALS SUCH AS PEARLS, SMALL WOODEN ARTIFACTS SUCH AS EBONY RAZOR SHEATHS SHOULD BE KEPT IN SALT WATER UNTIL THEY REACH THE CONSERVATION LAB TO PREVENT DAMAGE THAT SUDDEN FRESH WATER IMMERSION MAY CAUSE.**

Artifacts may be divided into four categories; large objects, such as anchors, cannon, and hull structure; miscellaneous encrusted objects (E.O.'s); miscellaneous small identified non-precious artifacts; and identified unique or precious artifacts. After tagging and recording, artifacts in each category will be treated as follows:

- a. Large Objects: These will be left in place on site until removal is approved by the Motivation, Inc. and wet storage facilities are available. Once removed, they should be handled so as to minimize damage and should be kept moist until they reach a permanent wet storage tank.
- b. Miscellaneous Encrusted Objects: These fall into two categories:
  - i. General identifiable non-fragile EO's. This category will generally include spikes, hull pins, cannon balls or other general ship's hardware.
  - ii. Interesting or fragile EO's. This category includes swords, knives, small tools, keys and other implements. EO's will not be broken open on board; instead they will be processed on shore at the storage and laboratory facility.
- c. Common Miscellaneous Small Identified Non-Precious Artifacts: These include such items as pottery sherds, barrel hoop fragments, musket balls, and lead sheathing. These may be bagged as a group from each excavation unit.
- d. Identified Unique or Precious Artifacts: These would include such things as emeralds, any gold artifacts, silver coins, intact tableware, religious artifacts, intact ceramic artifacts, etc. These will be assigned individual tags, unless they are a cluster of silver coins, and placed in individual small plastic bags or protective jars to prevent damage. Unique and precious objects will be immediately turned over to the ship's captain and be secured in the captain's cabin and/or safe on board until transported wet to the conservation lab.

## **8. Artifacts Processing, Stabilization and Conservation**

All artifacts recovered from site are to be conveyed to Motivation's conservation lab and stabilization facility. This facility will provide sufficient security to ensure the protection of the artifacts, which it receives. All artifacts will be checked-in to the lab by the conservator or curator and logged into the master database. Pre-conservation photographs and measurements will be done before conservation begins. Once complete, each artifact will be treated based on its composition and the Texas A&M Conservation Manual will guide all conservation efforts. Unique artifact concretions will be retained for items that we don't already have an intact example of and will be put in the "casting projects" storage area to be cast. Final records and inventories of identified artifacts from each site and excavation unit will be prepared for each vessel's activities and artifact overlay maps compiled at this facility so that results may be available to guide further salvage activities. Copies of all field records will be maintained at this facility during the salvage season and log sheet copies will be digitally submitted to the FKNMS staff at the requested intervals. Access to conservation data can be done via Motivation's Public Artifact Database located at <https://www.melfisher.com/MOBILE/site/Research.html>.

## **9. Project Senior Archeologist Supervision**

In order to ensure that the quality of information recorded is adequate and that the information is consolidated and interpreted in a professional manner, Motivation, Inc. will provide its professional senior archaeologist when significant archaeological deposits or hull structure are located and also requires sufficiently trained archaeological assistants on each vessel used in exploration and salvage activities.

## **10. Reporting Requirements**

Motivation, Inc. will prepare a recovery report on each site salvaged for the Adjudication of Title by the Admiralty Court as soon as possible after each year's salvage activity. Motivation will also supply the annual artifact recovery reports requested by the FKNMS.

## 4.17 PROTOCOL FOR REMOVING MUNITIONS / MUNITION COMPONENTS

*Motivation, Inc. v2019-01-14*

### **Protocol and Procedures for the Removal of 20<sup>th</sup> century military practice bomb fragments from the *Atocha* and *Margarita* Wreck Sites**

During the 1940's and 1950's areas west of Key West and in the general vicinity of the Marquesas Keys was used by the US Military as a bombing and strafing practice range. This live-fire activity has since been cancelled but there still remains a vast amount of unexploded ordinance as well as fragments of exploded ordinance in the areas of the *Atocha* and *Margarita* wreck sites.

In the past, when Motivation, Inc. salvage crews have encountered these types of materials and contacted the US Military or US Coast Guard here in Key West the response has been generally the same. In the case of potentially unexploded ordinance, they take the information on its location and instruct us to leave it alone. In the case of exploded bomb fragments, they didn't care if we picked them up and discarded them properly as trash.

Therefore, Motivation, Inc. has established the following protocol and procedure for dealing with these objects.

#### Potentially unexploded ordinance:

When an object is located on or buried in the seabed, is within the *Atocha* or *Margarita* Admiralty claim, do the following:

1. Leave the object in place and do not disturb it any further.
2. Document its location & description on the Daily Vessel Log Sheet.
3. Take underwater photos or video if possible and submit them to Motivation's conservation staff during artifact check-in.
4. Notify Gary Randolph at Motivation, Inc. of the items located and he will send an email notification the FKNMS staff at [FKNMSPermits@noaa.gov](mailto:FKNMSPermits@noaa.gov) so they can notify any other agencies or the US Military as needed.

#### Exploded Ordinance (inert bomb fragments):

When these types of objects are located on or buried in the seabed, is within the *Atocha* or *Margarita* Admiralty claim, do the following:

1. Recover the object to the salvage vessel.
2. Document its location & description on the Daily Vessel Log Sheet.
3. Place objects in bucket or container to be taken back to shore for disposal.
4. Once back in port dispose of objects properly in marina dumpster.
5. These will be entered into our database as Description: "Bomb Fragment"

## 4.18 POLICY FOR THE UNINTENDED EXCAVATION OF NON-ATOCHA / MARGARITA ARTIFACTS

*Motivation, Inc. v2019-01-14*

### Policy and Procedures for the Unintended Excavation of Non-Atocha / Margarita Artifacts

During the search and salvage of historic shipwreck artifacts from the Atocha and Margarita wreck sites it is quite possible to encounter artifacts from other, primarily 1800's period shipwrecks. Motivation, Inc. has no active Admiralty claim or interest in recovering these items and it is our policies to have our crews follow the procedures outline here.

If the Captain of the salvage vessel and the assistant archaeological data recorder are absolutely sure that an artifact that has been located on the bottom or recovered to the deck of the salvage vessel is NOT an Atocha or Margarita artifact, they will;

1. Record the non- Atocha / Margarita artifact on the ships Daily Log Sheet as such with a short description of the artifact.
2. Take a photo if possible, with a dive slate showing the date & name of recover vessel (to later be given to the Motivation conservation staff.
3. If recovered to deck, it will then be returned to the seabed where it was found and buried in-situ.
4. The immediate and appropriate disposal of all the ultra-modern obvious trash such as beer cans, fishing gear, engine parts, tools, etc. is approved to continue the effort to promote a clean marine environment.

If the Captain of the salvage vessel and the assistant archaeological data recorder are **NOT** absolutely sure that an artifact that has been located on the bottom or recovered to the deck of the salvage vessel is an Atocha or Margarita artifact, they will;

1. Recover the artifact and tag it.
2. Log it as usual on the ships Daily Log Sheet.
3. Bring it in with the rest of their artifacts to Motivation's conservation lab for analysis by the senior conservator and review by the Senior Archaeologist.
4. It will then be entered into the artifact database, pre-conservation photograph taken.

5. If after this point it is determined to be a non-Atocha / Margarita artifact it will be recorded in the database in the "Wreck Site" field as either "Intrusion – Atocha" or "Intrusion – Margarita" and will be returned to the location it was found. As it had a tag number assigned to it, it will be included in the conservation lab reports under these Wreck Site descriptions.

## 4.19 NOTES ON HUMAN REMAINS

To the best of our knowledge no human remains have been found or recovered from the wrecks of either the *Nuestra Senora de Atocha* or the *Santa Margarita*, 1622. The reason for this is rather obvious, human remains are notoriously fragile and their survivability in the warm biologically active waters of the Florida Keys is unlikely. Our working theory is that human remains are too fragile to survive. Human remains given the physical environment (warm water, high energy) associated with these shipwreck sites makes their survival highly unlikely. The other factor for the *Atocha* site that nearly obviates the presence of human remains is the timing of the wrecking process. We know from the archival documents and the testimony of the 5 survivors as well as the divers who reported the condition of the *Atocha* immediately after the sinking, that most of the crew and passengers had gone below decks and had battened the hatches, effectively locking themselves into the interior of the ship. The divers from the vessel that picked up the survivors and attempted to salvage treasures reported that the hatches were battened down and they could not gain access to the inside of the ship.

Approximately 2 weeks later, while preparations were being made in Cuba to mount a full-scale salvage operation on the *Atocha*, another hurricane ravaged the area. We know from the debris trail that the *Atocha* began to break apart. We also have a fairly good idea of what happens to human remains in warm ocean water over the course of weeks. As the *Atocha* opened up the cadavers now filled with decomposition gas were released into the hurricane induced wind waves and currents. That those remains were highly dispersed and subsequently further decomposed and consumed by animal life of both larger and smaller biota is likely without question. While some osteological remains of animals have been found these are usually larger species of mammals, i.e., cow pig and horse. *(Please see the "Faunal Analysis" report added to our Research Archives at <https://melfisher.com/artifacts>* These larger osteological remains that were recovered appear to have been the victuals both preserved and on the hoof for the use and consumption of the passengers and crew of the doomed vessels.

If, however, in the unlikely situation that identifiable human remains were encountered, we would follow the protocols laid out under Title XLVI Florida Statute 872.05. To wit:

(5) *DISCOVERY OF AN UNMARKED HUMAN BURIAL DURING AN ARCHAEOLOGICAL EXCAVATION*

(a) *When an unmarked human burial is discovered as a result of an archaeological excavation and the archaeologist finds that the unmarked human burial represents the burial of an individual who has been dead less than 75 years, the archaeologist shall notify the district medical examiner, and all activity that may disturb the unmarked human burial shall cease until the district medical examiner authorizes work to resume.*

(b) *If such unmarked human burial represents the burial of an individual who has been dead 75 years or more, archaeological activities may not resume until the State Archaeologist has been notified of the unmarked human burial.*

© *Within 15 days after the discovery of an unmarked human burial, the archaeologist conducting the excavation shall report to the State Archaeologist his or her opinion regarding the cultural and biological characteristics of the unmarked human burial and where human skeletal remains and associated burial artifacts should be held prior to a final disposition. The division may assume jurisdiction over and responsibility for the unmarked human burial pursuant to subsection (6).*

*(6) JURISDICTION; DUTIES OF THE STATE ARCHAEOLOGIST*

*The division may assume jurisdiction over and responsibility for an unmarked human burial in order to initiate efforts for the proper protection of the burial and the human skeletal remains and associated burial artifacts. Whenever the division assumes jurisdiction over and responsibility for an unmarked human burial, the State Archaeologist shall:*

*(a) Determine whether the unmarked human burial is historically, archaeologically, or scientifically significant. If the burial is deemed significant, reinternment may not occur until the remains have been examined by a human skeletal analyst designated by the State Archaeologist.*

*(b) Make reasonable efforts to identify and locate persons who can establish direct kinship, tribal, community, or ethnic relationships with the individual or individuals whose remains constitute the unmarked human burial. If possible, the State Archaeologist shall consult with the closest related family member or recognized community leaders, if a community or ethnic relationship is established, in determining the proper disposition of the remains found in the unmarked human burial.*

*© If he or she is unable to establish a kinship, tribal, community, or ethnic relationship with the unmarked human burial, determine the proper disposition of the burial and consult with persons with relevant experience, including:*

- 1. A human skeletal analyst.*
- 2. Two Native American members of current state tribes recommended by the Governor's Council on Indian Affairs, Inc., if the remains are those of a Native American.*
- 3. Two representatives of related community or ethnic groups if the remains are not those of a Native American.*
- 4. An individual who has special knowledge or experience regarding the particular type of the unmarked human burial.*

*If the State Archaeologist finds that an unmarked human burial is historically, archaeologically, or scientifically significant and if the parties with whom he or she is required under this subsection to consult agree, the human skeletal remains and the associated burial artifacts thereof shall belong to the state with title thereto vested in the division.*

*(7) REPORT REQUIRED*

*The archaeologist and human skeletal analyst involved in the archaeological excavation and scientific analysis of an unmarked human burial shall submit a written report of archaeological and scientific findings as well as a summary of such findings, in terms that may be understood by laypersons, to the State Archaeologist within 2 years after completion of an excavation. The division shall publish the summary within 1 year after its receipt and shall make such report available upon request.*

We at Motivation Inc. would most certainly want to see any potential human remains treated with the reverence and respect that they deserve.

## 4.20 REFERENCES

### REFERENCES

- ANDERSON, BERN. *BY SEA AND RIVER: THE NAVAL HISTORY OF THE CIVIL WAR.* DE CAPO PRESS, NY. 1989.
- COVINGTON, JAMES W. *THE SEMINOLES OF FLORIDA.* UNIVERSITY PRESS OF FLORIDA, GAINESVILLE. 1993.
- DE BRAHM, JOHN GERAR WILLIAM. *THE ATLANTIC PILOT. A FACSIMILE REPRODUCTION OF THE 1772 EDITION, WITH INTRODUCTION BY LOUIS DE VORSEY, JR.* THE UNIVERSITY PRESSES OF FLORIDA, GAINESVILLE. 1974.
- DUBOISE, BESSIE. *SHIPWRECKS AT JUPITER INLET.* FLORIDA CLASSICS PRESS, PORT SALERNO, FL. 1977.
- FONTANEDA, *FONTANEDA'S JOURNAL.* FLORIDA CLASSICS PRESS, PORT SALEM, FL.
- GEARHART, GARY. *CULTURAL RESOURCE INVESTIGATIONS AT PORT MANSFIELD TEXAS.* ESPY HUSTON, AUSTIN TX. 1992.
- GILLILAND, MARION SPIJT. *KEY MARCOS BURIED TREASURE: ARCHAEOLOGY AND ADVENTURE IN THE NINETEENTH CENTURY.* UNIVERSITY OF FLORIDA PRESS, 1989.
- HOFFMEISTER, JOHN. *LAND FROM THE SEA: THE GEOLOGIC STORY OF SOUTH FLORIDA.* UNIVERSITY OF MIAMI PRESS, CORAL GABLES. 1974.
- KOSKI, KARELL, DANIEL. "UNDER WATER ARCHAEOLOGICAL BACKGROUND STUDY, REMOTE SENSING SURVEY, AND ANOMALY IDENTIFICATION FOR THE TOWN OF OCEAN RIDGE BEACH RESTORATION PROJECT, PALM BEACH COUNTY, FLORIDA." MORGAN & EKLUND, INC. VERO BEACH, FL. 1993.
- LEVY, RICHARD S. "AN ARCHAEOLOGICAL SURVEY OF CAPE CANAVERAL AIR FORCE STATION, BREVARD COUNTY, FLORIDA." TECHNICAL REPORT FOR THE UNITED STATES PARK SERVICE. WASHINGTON D. C. 1984.
- MARX, ROBERT. *SHIPWRECKS OF THE AMERICAS.* DOVER PUBLICATIONS, INC. NEW YORK. 1987.
- MCCARTHY, KEVIN M. *THIRTY FLORIDA SHIPWRECKS.* PINEAPPLE PRESS INC, SARASOTA, FL. 1992.
- MCGOUN, WILLIAM E. *PREHISTORIC PEOPLES OF SOUTH FLORIDA.* UNIVERSITY OF ALABAMA PRESS, BIRMINGHAM. 1993.
- MCIVER, STUART B. *YESTERDAY'S PALM BEACH, INCLUDING PALM BEACH COUNTY.* E.A. SEEMAN PUBLISHING INC. MIAMI, FL. 1976.
- MILANICH, JERALD T. *FLORIDA INDIANS AND THE INVASION FROM EUROPE.* UNIVERSITY PRESS OF FLORIDA; GAINESVILLE. 1995.
- PERRY, MAC. *INDIAN MOUNDS YOU CAN VISIT.* GREAT OUTDOORS PUBLISHING COMPANY, ST. PETERSBURG., FL. 1993.
- POTTER, JOHN. *THE TREASURE DIVERS GUIDE.* FLORIDA CLASSICS LIBRARY, PORT SALERNO, FLORIDA. 1988.
- ROMANS, BERNARD. *A CONCISE HISTORY OF EAST AND WEST FLORIDA. 1775.* UNIVERSITY OF FLORIDA PRESS, FACSIMILE REPRODUCTION, 1982.
- SINCLAIR, JAMES. *RESEARCH DESIGN ADDRESSING THE ARCHAEOLOGICAL INVESTIGATIONS OF AN HISTORIC PERIOD SHIPWRECK SITE "JUNO BEACH SITE",* FILE COPY, 2007
- SINGER, STEPHEN. *SHIPWRECKS OF FLORIDA.* PINEAPPLE PRESS, INC. SARASOTA FLORIDA. 1992.
- SMITH, AUSTIN. *HISTORICAL MYSTERIOUS PICTURESQUE NEW RIVER.* FRIENDS OF THE LIBRARY OF FORT LAUDERDALE. 1979.
- VIGNOLES, CHARLES. *OBSERVATIONS UPON THE FLORIDA'S. FACSIMILE REPRODUCTION OF 1823 EDITION. INTRODUCTION AND INDEX BY JOHN HEBRON MOORE.* THE UNIVERSITY PRESSES OF FLORIDA, GAINESVILLE. 1977.

## 5 ARCHAEOLOGICAL FIELDWORK & RESEARCH REPORT – 2025

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This section will include the following updates relating to the 2025 field season:

- Formal request for Certification renewal
- A narrative summarizing the project's activities during the 2025 reporting period
- The archaeological summary of findings and analysis
- Proposed activities and methodological approach
- Proposed activity areas for requested certification renewal period
- A representative sample of the full-size master chart of the *Atocha* and *Margarita* sites
- Zoomed-in chart views of activity during the 2025 reporting period shown in the of the master chart to make them discernable.

## 5.1 FORMAL REQUEST FOR FKNMS CERTIFICATION RENEWAL

*January 29, 2026*

**Current Project Name:** *Nuestra Señora de Atocha & Santa Margarita Expedition*

**Current FKNMS Certification Number:** #FKNMS-2020-052-A6

**Certification Holder:** Motivation, Inc.  
Mr. Kim Fisher, President/CEO  
605 Simonton St.  
Suite-B  
Key West, FL 33040

**Requested Certification Renewal Period:** April 1, 2026 to March 31, 2031 (5-years)

Please consider this a formal request by the certification holder to renew the above certification for a 5-year period.

Regards,

**(b) (4)**

Motivation, Inc.  
Mr. Kim Fisher, President/CEO

## 5.2 PROJECT ACTIVITIES NARRATIVE – 2025

In 2025, Motivation Inc. is still dealing with very unusual windy weather-related issues as well as the new FKNMS Special Conditions that are currently the subject of our Admiralty action against the FKNMS which have drastically reduced the number of excavations we are able to make each day at sea by more than 50% which resulted in limited levels of activity. Like previous seasons, these overly burdensome requirements caused some of our contractors working the site to pull out leaving us now with only one or two recovery vessels currently working on the *Atocha* and/or *Margarita* sites. While limited, the methodologies utilized remain the same as in previous seasons.

These methodologies consist of ground-truthing various anomalies that have been collected in past years, and/or areas directly associated with significant past finds. These are investigated either by conducting circle searches by divers with metal detectors, hand fanning and where appropriate or if necessary, utilizing mechanical means of over burden removal, such as prop-wash deflection. The location and any planned activities within the FKNMS “certification area” or in the overall admiralty award area are predicated on many highly variable factors including weather, sea state, tides, and vessel capabilities among others.

Recoveries in 2025 were light, however there were several good reasons for this. One is that we have been investigating an area that has never been investigated/worked before. This area is along the track of the *Atocha*’s scatter trail going north north-west away from the *Atocha*’s main pile area and has produced several silver coins, ballast, and pottery. The seabed in this area consists of a much harder, consolidated hard mud so investigations and required excavations are very slow to penetrate deep enough to get within metal detector range of the embedded artifacts.

Another reason are the lingering challenges produced by the Covid-19 pandemic. Finding new qualified drivers and crew has proven to be a challenge, but we are overcoming this slowly over time. As with so many other businesses, finding new team members is difficult with so many remaining work from home opportunities as well as ongoing access to unemployment and other economic benefits. Additionally, the economic situation has made Key West an increasingly difficult place for people to live considering the cost-of-living increases and inflation, making it much harder to find good employees and crew members. Despite these challenges, we strive to continue and improve our operations.

One of the upgrades to our operation is the addition of a Starlink communications system, this will allow us to keep in close contact with our salvage vessels, and as always if significant deposits of artifacts are found – such as hull structure, it will be left in situ to be properly documented by our archaeologist.

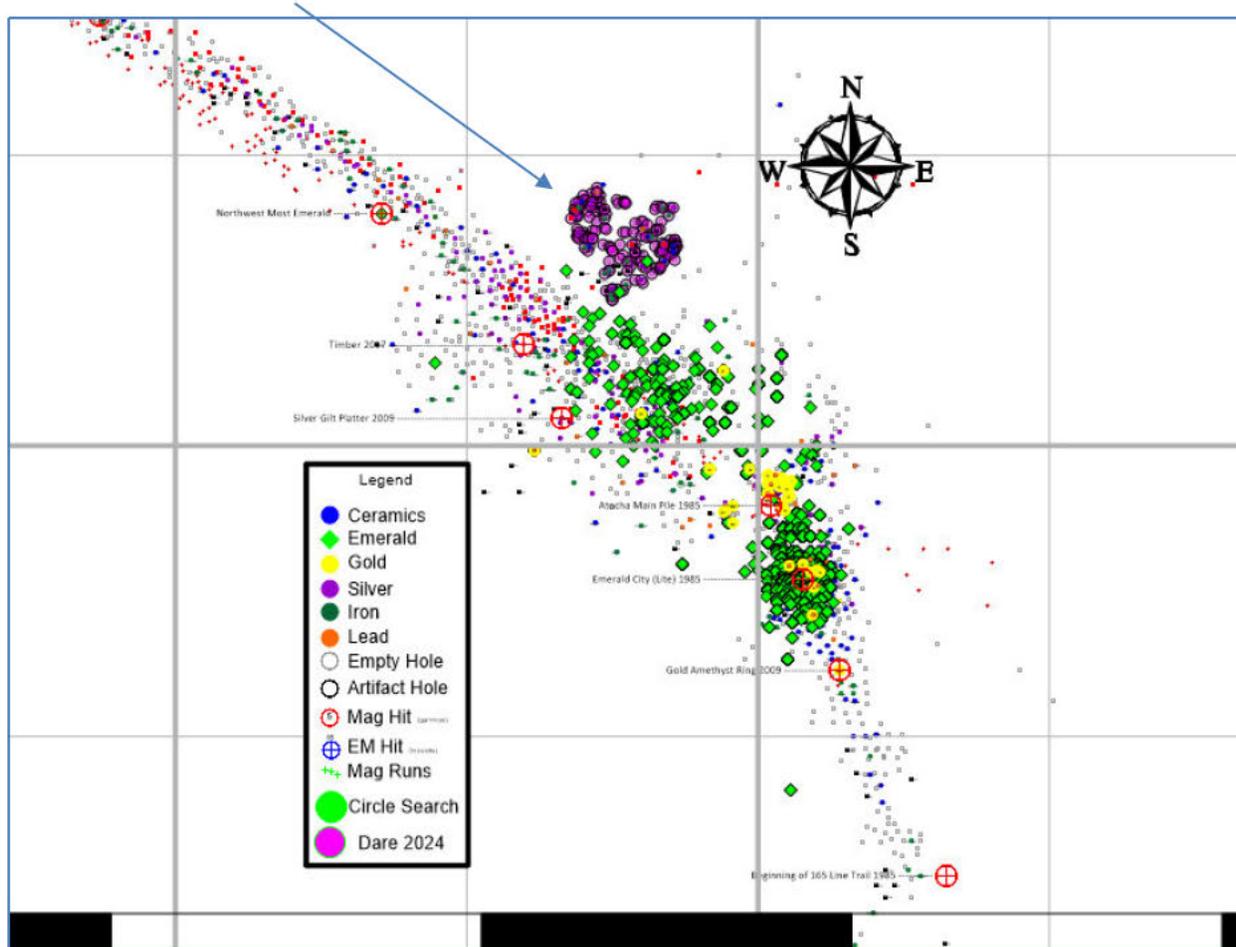
We are hopeful that this area may also produce some of the many missing manifested and unmanifested artifacts as listed in Section 4.14 of this report.

### 5.3 ATOCHA & MARGARITA SITE – 2025 DAYS AT SEA & EXCAVATION LOGS

Vessel	Days at Sea	Atocha Excavations	Atocha Circle Searches	Margarita Excavations	Margarita Circle Searches
Magruder	0	0	0	0	0
Dare	78	153	0	0	0
Totals	78	153	0	0	0

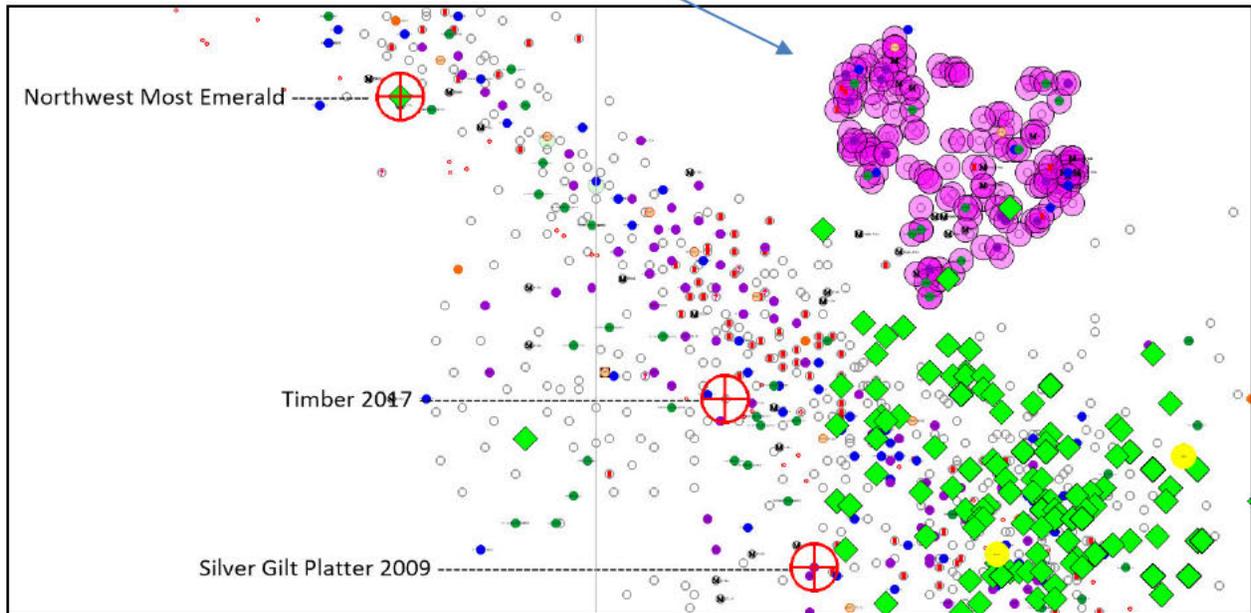
### 5.4 ATOCHA EMERALD CITY ACTIVITY AREAS - 2025

Excavation areas shown with large purple highlights

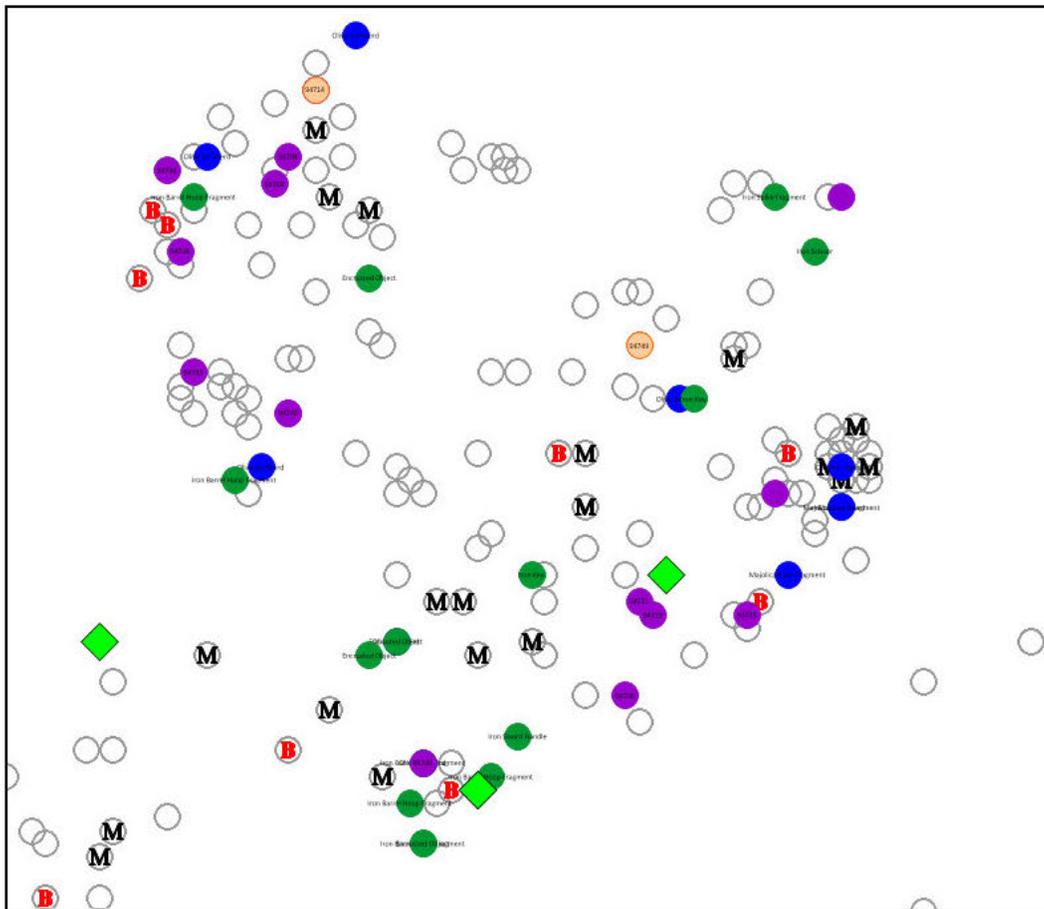


Scale increments = 0.20nm

Excavation areas shown with large purple highlights



Zoomed detail of above chart 2025 activity areas



## 5.5 ARCHAEOLOGICAL FINDINGS AND ANALYSIS -2025 PERIOD

Very few finds were made this year for numerous reasons, weather being one of the main obstacles. Those objects that were recovered do not vary from the already well documented types of material, silver coin, earthenware pottery and ballast, these are not significant enough for any sort of robust analysis.

Please see attached table of 2025 *Atocha* and *Margarita* site finds in *Section 10, Appendix-1*.

## 5.6 ARTIFACT ANALYSIS FOR SOME OF THE 2025 RECOVERIES

### 5.6.1 Iron Hull Spikes and ships fasteners from the *Nuestra Señora de Atocha* (1622)

It is common and understandable that when most people think about the *Nuestra Señora de Atocha, 1622* the first things that are thought of is the masses of intrinsically valuable treasures that were carried. However, as archaeologists interested in all aspects of the collection of treasures there are many objects that are rarely thought about. Among the thousands of artifacts recovered by Mel Fisher's team since the 1970s were many hundreds of both small and large hand-wrought iron spikes and bolts that once held the galleon's oak planking and frames together.

The smaller iron spikes or nails as they are often called, are all part of the category of ship fasteners. These "spikes" often ran between 30 - 60 cm (12 - 24 inches) long and could weigh several pounds each are among the best-preserved examples of early 17th-century Spanish naval ironwork.

Iron bolts referred to as pins or "through bolts" round in aspect and were used in pre-drilled holes, the lengths of which could range between approximately 40 - 120 cm (15 - 47 inches) long. Many examples display clenched or upset distal ends, consistent with through-fastening of heavy structural timbers.

#### **Typical shape of *Atocha* Ships Fasteners**

The typical shapes of the ships spikes of fasteners are square to rectangular shanks with tapering profiles, and the heads that are typically square, sub-rectangular, or slightly domed.

The general condition of the recovered spikes can range from extremely well preserved with minimal encrustation cover, to poorly preserved and thickly encrusted. General preservation has more to do with depositional environment than the thickness of the encrustation.



*Hollow encrustation of a ship's fastener*



*Conserved iron ships fastener/ spike Atocha 1622*

### **Manufacturing Technology**

All fasteners were produced by hand forging from wrought-iron bar stock. Iron was heated in charcoal-fired forges and shaped using hammer and anvil. Heads were formed by hot upsetting; shanks were drawn to length and squared. Variability in dimensions reflects artisanal production rather than standardized industrial output.

The iron itself was likely smelted using bloomery or early finery processes, yielding low-carbon iron well suited for impact resistance and ductility but vulnerable to marine corrosion.

### **Sources of Iron for ships spikes**

The iron used for the *Atocha's* spikes almost certainly originated in the Basque region of northern Spain (modern-day provinces of Vizcaya, Guipúzcoa, and Álava). By the late 16th and early 17th centuries, the Basque country was the principal supplier of high-quality shipbuilding iron to the Spanish Crown.

- Mines around Bilbao and the Cantabrian mountains produced bog iron and hematite ores that were particularly low in phosphorus and sulfur, yielding tough, corrosion-resistant wrought iron.
- The famous “hierro de Vizcaya” (Biscayan iron) was a protected monopoly; royal decrees required that all ships built for the Indies fleets use Basque iron for critical fastenings.
- Smelting was carried out in small water-powered “ferrerías” (Basque bloomeries) that used charcoal and hydraulic bellows. The resulting blooms were repeatedly heated and hammered to consolidate the iron and drive out slag.

Archeometallurgical analysis of *Atocha* spikes (conducted by the Mel Fisher Maritime Heritage Society and others) shows very low slag inclusions and a microstructure typical of indirectly reduced Basque iron, confirming this origin.

### How were ships spikes manufactured

These were not mass-produced nails, but heavy, hand-wrought fasteners made by specialist naval smiths (\*clavazón de construcción\*). The process was labor-intensive:

1. Starting material: A bloomery iron bar roughly 4–6 cm in diameter was reheated in a forge to welding heat (bright orange yellow).
2. Drawing out: Two or more smiths with sledgehammers drew the bar into a long square-section rod on an anvil.
3. Pointing: One end was hammered into a four-sided chisel point that could be driven through pre-bored holes in the timber.
4. Heading: The opposite end was upset (thickened) and flattened into a square, diamond or rose-head shape while red-hot
5. Final sizing: Length varied according to structural need—treenails (wooden pins) were used for lighter planking, but heavy iron spikes were required below the waterline and for joining thick ceiling planking, knees, and breasthooks.

Each spike was individually made; no two are exactly alike. X-rays of recovered *Atocha* spikes reveal the characteristic folded, fibrous grain and weld lines of hand forging. Many still retain the original hammer marks and slight bends from the last blow of the sledge.

### Ships fasteners and ships construction

In 1619–1621, when the *Atocha* was constructed at the royal shipyard in Havana, Cuba (using timber cut in Cuba and Honduras), iron spikes played critical structural roles that wooden treenails alone could not:

- Through-bolts for the keel, stem, sternpost, and deadwood: Very long bolts (up to 1 meter) passed completely through the timber and were clenched (bent over large rosettes) on the inside.
- Frame-to-planking fasteners below the waterline: The lower hull was spiked with iron rather than tree nailed because the thick outer planking (10–15 cm) had to resist teredo worm and withstand grounding. Holes were bored with augers, the spike driven from outside, and the protruding tip either clenched over a rosette inside or simply peened flat.
- Rider keelsons, breast hooks, and pointer knees: Massive diagonal and horizontal timbers inside the hold were secured with long drift bolts driven at angles.
- Pump well and mast step assemblies: Heavy ironwork held these critical components rigid.

A typical 550-ton galleon like the *Atocha* required several tons of iron fastenings. The sheer quantity recovered from the wreck (over 1,000 spikes and bolts documented) underscores how heavily Spanish shipwrights relied on iron in the tropics, where wooden treenails alone would loosen in warm, worm-infested waters.

### **Quantification and Distribution**

Precise counts of iron fasteners are not possible due to fragmentation, corrosion, and recovery bias. Based on comparative data from Iberian wrecks and contemporary shipbuilding treatises, a vessel of approximately 500–550 tons burden—consistent with the *Atocha*—would have incorporated an estimated:

- 5,000–8,000+ iron fasteners total
- Several hundred large structural bolts
- Several thousand medium-sized spikes
- A smaller number of drift pins and minor nails

Larger bolts would have been concentrated along the keel, bow, and stern, while spikes dominated hull planking zones.

### **General preservation**

The *Atocha*'s primary cultural deposit sank in anaerobic mud/sand, which dramatically slowed corrosion. While many iron spikes and nails had completely deteriorated into hollow encrustations, many spikes were well preserved and still retained sharp chisel points and legible forge welds after 400 years underwater.

Iron fasteners from the *Nuestra Señora de Atocha* reflect a mature Iberian shipbuilding tradition that strategically combined wooden and iron fastenings to meet the demands of transatlantic navigation. Their manufacture, distribution, and functional deployment are consistent with early 17th-century Spanish galleon construction and reinforce documentary accounts of robust, conservatively engineered fleet vessels

Today these iron relics, often encrusted with coral and bearing the unmistakable texture of the 17th-century forge are iconic artifacts of Spain's Golden Age maritime power, and silent testimony to the skill of the long-forgotten Basque smiths.

### **Sources:**

1. Steffy, J. R. *Wooden Ship Building and the Interpretation of Shipwrecks*. Texas A&M University Press, 1994.
2. Goodman, D. *Spanish Naval Power, 1589–1665*. Cambridge University Press, 1997.
3. Steffy, J. R. 1994; Rule, M. *The Mary Rose: The Excavation and Raising of Henry VIII's Flagship*. Conway Maritime Press, 1982.
4. Mike McCarthy, *Ships' Fastenings: From Sewn Boat to Steamship*, Texas A&M University Press, 2005
5. McKee, E. *Working Boats of Britain*. Conway Maritime Press, 1983; comparative estimates applied to Iberian hull forms.

### 5.6.2 Copper Coinage and the Absence of the Maravedí in the Monetary Assemblage of the *Nuestra Señora de Atocha* (1622)



*Eight-Maravedí coin of Philip III. Burgos, 1604*

#### **General Historical Background of the Maravedí**

The maravedí originated in medieval Iberia during the eleventh and twelfth centuries, initially as a gold coin modeled on Islamic dinars circulating in Al-Andalus. Over time, the term evolved from a specific coin to a unit of account within the Castilian monetary system. By the late Middle Ages, the maravedí had lost its association with gold and instead became a reference unit against which silver and copper denominations were valued.

During the fifteenth and sixteenth centuries, particularly following the monetary reforms of the Catholic Monarchs and Charles I, the maravedí became increasingly associated with low-value copper coinage. These copper maravedís were intended to facilitate everyday market transactions, wage payments, and minor commercial exchanges within Spain. Their value was fiduciary rather than intrinsic, relying on royal authority rather than metal content.

By the early seventeenth century, when Spain's American empire was at its height, the maravedí functioned primarily as a small-denomination accounting and copper currency unit within a broader hierarchical system dominated by silver reales and gold escudos. While this structure functioned with relative stability in Iberia, its transplantation to the Americas proved uneven. In colonial contexts, particularly those connected to mining and transatlantic bullion transport, silver rapidly supplanted copper as both currency and commodity, limiting the maravedí's relevance outside local retail economies.

### **The Atocha and Spanish Colonial Currency**

The wreck of the *Nuestra Señora de Atocha*, lost in the Florida Straits during the 1622 *Tierra Firme* fleet disaster, provides one of the most important archaeological assemblages for understanding Spanish imperial material culture, trade, and monetary practice in the early seventeenth century. The cargo of the *Atocha* dominated by silver coins, silver bars, gold artifacts, emeralds, and high-value personal goods reflects the priorities of the Spanish colonial economy at its height. Notably absent from the assemblage, however, is any meaningful representation of copper coinage, particularly low denomination maravedís.



*1986 Atocha copper coin, tag #86A-109002*

Interestingly Maravedis were seemingly unpopular in Spain's New World Colonies from nearly the beginning of their entry, first as conquistadors and then as Governors of enormous tracks of territory, Maravedis never really caught on. The non- acceptance of this type of coinage was not accidental. Rather, it reflects broader structural and cultural factors that rendered copper coinage marginal within the Spanish American monetary system and largely irrelevant to transatlantic treasure fleets such as that of 1622.

### **The Maravedí in the Early 17th-Century Spanish Monetary System**

By the early 1600s, the maravedí functioned primarily as a copper unit of small change within Spain's tiered currency system. Gold escudos served elite and state finance; silver reales and pesos dominated commerce, taxation, and intercontinental trade; copper maravedís were intended for local retail exchange.<sup>1</sup>

In Spain, copper coinage circulated under close administrative oversight. In contrast, Spanish America—particularly regions supplying the *Tierra Firme* fleets—operated on a fundamentally different scale, one dominated by silver extraction and export.

## **Silver Dominance and the Atocha's Cargo Profile**

The Atocha was a fleet flagship tasked with transporting royal and private treasure from the Americas to Spain. Its recovered cargo illustrates this function clearly, the Atocha carried:

- Over 160,000 silver coins, primarily “reales” of all denominations.
- There were over 980 silver bars stamped with mint and assayer marks.
- There was over 350lbs of gold in the form of ingots and disks.

There were hundreds of ingots of copper of various sizes, intended for the gun foundries and bell makers in Spain. These were some of the officially shipped cargos and much of it appeared on the manifest of the Atocha.

What did not appear on the official manifest was the private wealth and possessions of the wealthy merchants and officers, as well as the contraband, which, in the period that the Atocha was lost was rampant. The types of material that would have been undocumented and contraband that has been recovered included gold jewelry and chains, and bars and disks with no tax stamps. And of course, there were the undocumented and undeclared emeralds extracted from Colombian sources, over 12,000 of which have been recovered. No comparable assemblage of copper coinage has been documented from the wreck site.

## **Why no Maravedis**

As to why there was nearly a complete lack of copper coinage on the Atocha or listed as cargo in any of the homeward bound treasure is deeply influenced by the social and cultural settings that had developed in the New World.

## **Weight to value:**

Copper maravedis lacked sufficient value to justify inclusion aboard heavily guarded treasure ships. Transport space aboard the Tierra Firme fleet was reserved for taxed silver, registered private bullion, and high-value personal wealth.

## **Trust, Counterfeiting, and Colonial Avoidance of Copper**

Copper coinage suffered disproportionately from counterfeiting and debasement, particularly in colonial contexts where enforcement was uneven. Colonial merchants frequently discounted copper or refused it outright, preferring silver even for small transactions.<sup>4</sup>

This led to the phenomenon of silver coins that had been cut down to equal smaller denominations. This cutting down of coins that were already relatively roughly handmade and stamped

made sense to the merchants and citizens of the Spanish Colonies, silver was silver and was worth whatever the weight was. These small factional denominations of larger coins became known as “bits”. As long as silver had value the bit coins retained their value by weight. This held true as the cut coin bits filtered into English Colonies and later the nascent United States in North America. The colonists there even came up with a little saying about bit coins that survive to this day, although rarely used:

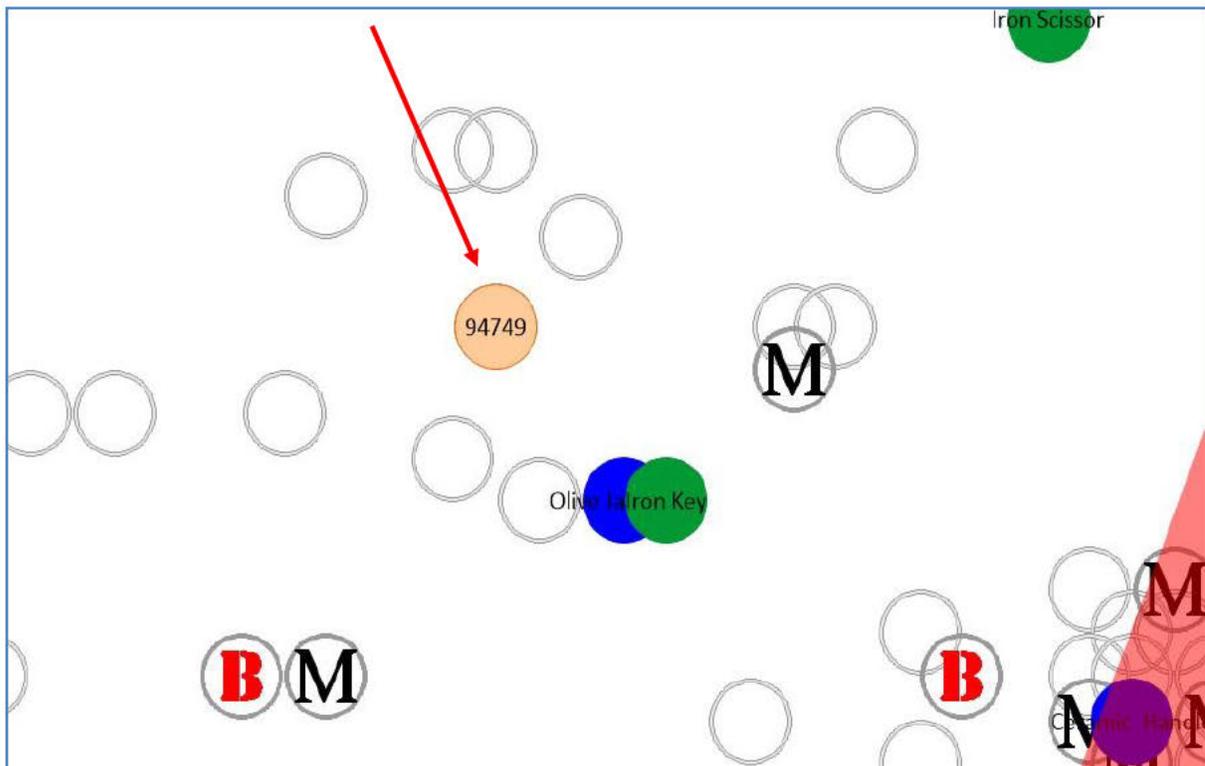
“two bits, four bits, six bits, a dollar.” This is reflective of the times that there were Eight parts that could be gotten from a Spanish silver dollar.

### **Archaeological Implications of Copper Absence on the Atocha**

The lack of copper maravedís in the Atocha assemblage is archaeologically significant. It confirms that copper coinage was not integrated into fleet-based wealth systems and that silver functioned as both currency and commodity.



2025 Atocha recovery, copper coin tag #94749



### Conclusion

The absence of maravedí copper coinage from the Nuestra Señora de Atocha reflects Spanish colonial monetary practice in 1622. Copper coinage was unstable, bulky, and locally confined and had no meaningful role in the transatlantic circuits of imperial wealth.

### Sources and Footnotes

1. Hamilton, Earl J. *American Treasure and the Price Revolution in Spain, 1501–1650*. Harvard University Press, 1934.
2. TePaske, John J., and Herbert S. Klein. *The Royal Treasuries of the Spanish Empire in America*. Duke University Press, 1982.
3. Bakewell, Peter. *Silver Mining and Society in Colonial Mexico*. Cambridge University Press, 1971.
4. Motomura, Akira. "Money, Prices, and Coinage in Colonial Spanish America." *Economic History Review* 44, no. 2 (1991).
5. Stein, Stanley J., and Barbara H. Stein. *Silver, Trade, and War*. Johns Hopkins University Press, 2000.

### 5.6.3 Emeralds from the Nuestra Señora de Atocha (1622)

#### Archaeological Background, Recovery History, and Significance

##### Introduction

This report presents an overview of emerald gemstones recovered from the Spanish galleon Nuestra Señora de Atocha, lost in 1622. The purpose of this document is to summarize the historical background, recovery, material characteristics, and cultural significance of the emerald assemblage in a clear and accessible format suitable for annual permit renewal review.

The emeralds recovered from the Atocha constitute the largest archaeologically documented assemblage of early 17th-century emeralds in the world. As a cultural resource, this assemblage holds exceptional value for maritime archaeology, Spanish colonial studies, and public interpretation.



*2025 Atocha Emerald, tag #94720*

##### Historical Background

###### **Emerald Mining in Colonial Colombia**

Emeralds transported aboard the Atocha originated primarily from the Muzo mining district, with possible contributions from Chivor. These mines were under direct Crown control and relied heavily on forced Indigenous labor. Emeralds were among the most valuable commodities in the Spanish Empire due to their high value-to-weight ratio and strong demand in European and Asian markets. Because of their extreme value, their light weight and small size also made these gemstones extremely desirable as items of contraband.

Despite strict regulation, emerald mining and export were characterized by widespread smuggling and underreporting, a factor that serves to complicate historical reconstruction of shipments.

###### **Site Location and Environmental Setting**

The wreck of the Nuestra Señora de Atocha lies within the waters of the Florida Keys and is protected under the jurisdiction of the Federal Admiralty Courts and the Florida Keys National Marine Sanctuary. The site is characterized by sandy seabed conditions interspersed with hard packed mud and hard-bottom areas. Storm activity and shifting sediments have historically influenced artifact dispersal, survival and preservation across the wreckage debris fields.

## Archaeological Discovery and Recovery History

### **Modern Discovery**

Modern recovery of the Atocha site occurred between 1970 and 2025, historically under both state and federal authorization, led by Mel Fisher and Treasure Salvors, Inc. Early recovery methods evolved over time, gradually incorporating more systematic mapping, documentation. The evolution of the methodologies helped to develop conservation practices, and archaeological standards in underwater archaeology but also Maritime laws.

### **Emerald Recovery**

While some emeralds were recovered over the course of the recovery operations, the large concentration of uncut gems did not happen until after the discovery of the primary cultural deposit (PCD) in 1985. During the ongoing recovery in that area a diver was utilizing an airlift, and although he was careful, the airlift sucked up nearly 2000 of these gemstones before it was turned off. To date, approximately 12,000 emeralds or 6 lbs. worth of the gems have been recovered.

### **Description of the Emerald Assemblage**

The Atocha emerald assemblage includes a few different kinds of stone, these range from the highly desirable dark green gems from the Muzo district of today's Colombia. The forms they have been found in include rough emerald crystals, often hexagonal and occasionally embedded in calcite matrix.



*Uncut Atocha Emerald Gemstones*

There were some cut gemstones, including table cuts, step cuts, and early rose cuts and Polished but unset stones such as cabochons. There were some stunning pieces of jewelry that included emeralds that have been found through the years. The mounted emeralds were recovered in various styles of gold settings representing artistic traditions that were popular in that period.

Many of the mounted gemstones were made for officials of the Catholic church, such as the Bishops cross pictured here. The way the gems were cut and polished reflect early 17th-century lapidary practices, which emphasized preservation of weight rather than maximizing brilliance.

### **Geological Provenance**

Gemological analyses conducted by recognized institutions, including the Gübelin Gem Lab and the Smithsonian Institution, confirm that the emeralds are consistent with Colombian sources, primarily Muzo. Provenance determinations are based on trace-element chemistry, inclusion patterns, and crystal morphology.



*Bishops Cross, Atocha, 1622*

### **Condition and Conservation**

The emeralds exhibit a range of conditions from pristine to moderately abraded. Observed wear is consistent with marine deposition, storm action, and long-term burial. No evidence of modern enhancement treatments has been identified.

All emeralds are currently curated in controlled environments designed to preserve their physical and chemical stability.

### **Archival Documentation and Correlation**

With all historic projects, the study of emeralds as well as their trade we must start with archival sources. Spanish archival records are housed in several repositories two main archives for the study of emeralds are the Archivo General de Indias (Seville) and the Archivo General de la Nación (Bogotá). These sources confirm emerald shipments within the Tierra Firme Fleet. However, the manifest of the Atocha shows no emeralds being shipped. The absence of any documentation of gemstones is attributed to smuggling, which we believe was the origin of the gems on the Atocha.

As a result, the archaeological assemblage represents the most reliable dataset for understanding emerald transport aboard this and other vessels.

### **Interpretation and Significance**

#### **Economic and Cultural Role**

Emeralds aboard the Atocha functioned primarily as portable wealth, intended for European gem markets, royal gifts, ecclesiastical use, and private mercantile exchange. The predominance of loose stones indicates shipment prior to final cutting and setting in Europe.

## **Archaeological Significance**

### **The Atocha emeralds represent:**

- The largest sealed assemblage of early modern emeralds
- A benchmark for Colombian emerald provenance studies
- Direct material evidence of Spanish colonial extraction and trade systems
- Their archaeological context provides insight unavailable through archival sources alone.

## **Conclusion**

The emeralds recovered from the Nuestra Señora de Atocha constitute an archaeologically finite, historically significant assemblage of exceptional value. Through responsible documentation, conservation, and interpretation, this resource continues to contribute meaningfully to our understanding of Spanish colonial maritime history.

### ***Why are Atocha emeralds so valuable?***

The emeralds recovered from the Spanish galleon Nuestra Señora de Atocha are among the most extraordinary gemstones ever discovered. Their value is not accidental. It begins deep in the mountains of Colombia at the legendary Muzo Mines, widely regarded as the source of the finest emeralds on Earth.

### ***Hear from Muzo mine emerald expert Manuel Marcial at this link;***

<https://www.youtube.com/watch?v=JWnaW2uw5sA&t=3s>

#### ***1. References***

2. Archivo General de Indias (AGI), Seville. Contratación, legajos 469–472; Indiferente General, legajos 744–746.
3. Archivo General de la Nación (AGN), Bogotá. Fondos Coloniales, minería de Muzo.
4. Fisher, Mel. Shipwreck! Treasures of the Spanish Main. New York: Random House, 1992.
5. Gübelin, Eduard J. “Inclusion Characteristics of Colombian Emeralds.” *Gems & Gemology* 19, no. 4 (1983): 186–199.
6. Gemological Institute of America (GIA). “Historical Emerald Cutting Techniques.” *Gems & Gemology* 25, no. 2 (1989): 70–85.
7. State of Florida Division of Historical Resources. Atocha Artifact Inventories, 1982–1985.
8. Mel Fisher Maritime Museum. Atocha Emerald Collection Accession Records.

*Internet sources:*

<https://www.gia.edu/doc/Emerald-and-Gold-Treasures-of-the-Spanish-Galleon-Nuestra-Senora-de-Atocha.pdf>

<https://naturalgemsbelgium.shop/blogs/natural-gems-belgium-general-blog/the-atocha-emeralds-unearthing-the-treasures-of-a-sunken-spanish-galleon>

## **5.7 PROPOSED ACTIVITIES AND METHODOLOGICAL APPROACH GOING FORWARD**

Motivation Inc. proposed activities are Court ordered to continue its ongoing recovery of the remains of the *Nuestra Señora de Atocha and the Santa Margarita, 1622*. The activities that will be undertaken in this ongoing project and remain basically the same as they have in the past. The rationale for continuing to approach the recovery of the shipwreck remains in the same fashion is for the simplest of reasons, they have worked and continue to work.

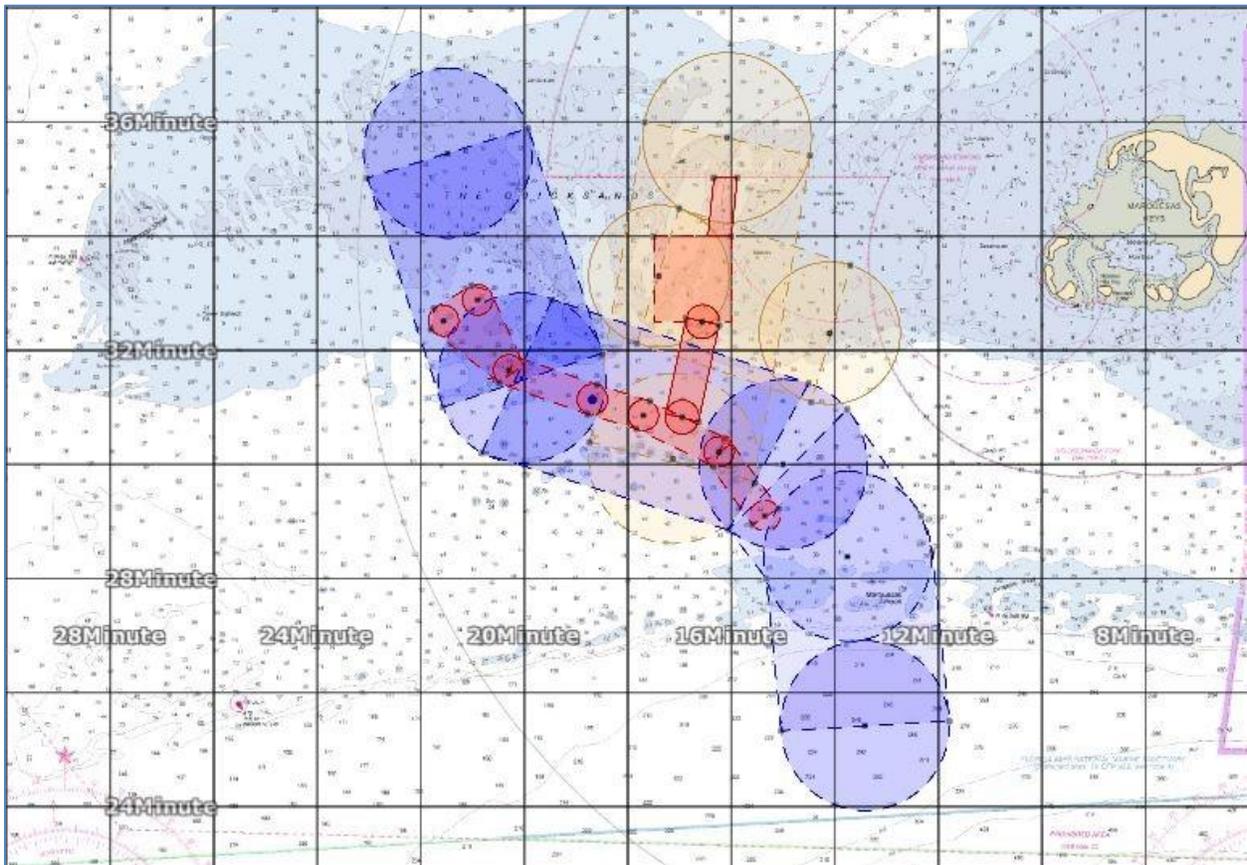
Often the work undertaken is highly repetitive and is not subject to radical changes. The diligence required by the Court as well as many years of intervention on both the *Atocha* and the *Margarita* have allowed Motivation to arrive at what we believe are the most comprehensive and efficient ways of both search and recovery methodologies. For a more complete explanation of the proposed methodologies that will be utilized to accomplish our orders from the Federal Court and at the same time work within the parameters of the FKNMS Certification, please refer to Sections 4.15 -4.19 of the current document.

## **5.8 PROPOSED ACTIVITY AREAS FOR REQUESTED CERTIFICATION RENEWAL PERIOD**

Motivation Inc. in its various recovery efforts through the years has always required flexibility in where on a given day – or even a given hour in the same day, it conducts its investigations and recovery procedures. The specific location of any activities within the FKNMS “certification areas” or in the overall admiralty award areas are predicated on many factors, weather conditions, tides, and vessel capabilities, crew, and equipment, overly burdensome FKNMS “Special Conditions,” among others. Motivation intends on working various, yet to be determined locations within the current FKNMS certification areas as well as within our Federal Admiralty claims as defined in the next section and will document them appropriately as we do so during the next certification period.

## 5.9 BOUNDARIES OF THE AREA INVESTIGATED

“NOAA Chart showing *Atocha* (purple) & *Margarita* (orange) Admiralty Claims and NOAA / FKNMS Certification Areas (red)”



See the detailed coordinates for the *Atocha* & *Margarita* areas on the following page.

### 5.9.1 Current *Atocha* Site Admiralty Claim Area

The current coordinates for *Atocha* admiralty claim #75-1416 CIV-ARONOVITZ (KING) are as follows:

3,000 yards from any point on a line created by the following five points:

<u>Point No.</u>	<u>Latitude</u>	<u>Longitude</u>	
1	(b) (4) N	(b) (4) W	Northern Extension Point, 1999
	(b) (4) N	(b) (4) W	
2	(b) (4) N	(b) (4) W	9 Bronze Cannon Area
	(b) (4) N	(b) (4) W	
3	(b) (4) N	(b) (4) W	Main Pile Area
	(b) (4) N	(b) (4) W	
4	(b) (4) N	(b) (4) W	Amended Extension Point, 2006
	(b) (4) N	(b) (4) W	
5	(b) (4) N	(b) (4) W	Additional Extension Point, 2006
	(b) (4) N	(b) (4) W	

**5.9.2 Current FKNMS Atocha Certification Area:**

1. Within 600 yards of the axis created by connecting the following points:

<u>Point No.</u>	<u>Latitude</u>	<u>Longitude</u>
1	(b) (4)	
2	(b) (4)	
3	(b) (4)	
4	(b) (4)	
5	(b) (4)	
6	(b) (4)	
7	(b) (4)	
8	(b) (4)	
9	(b) (4)	

2. Within 500 feet of the point located at:

<u>Point No.</u>	<u>Latitude</u>	<u>Longitude</u>
1	(b) (4)	

Note: This area #2 south of Stock Island is a near shore equipment and remote sensing test area designated by the FKNMS for the temporary placing of targets on sand bottom and testing tethered HAUV, ROV and other remote sensing equipment.

### 5.9.3 Current *Margarita* Site Admiralty Claim Area

The current coordinates for *Margarita* admiralty claim #79-1381 Civ-JLK are as follows:

2,500 yards from any point on a line created by the following two points:

<u>Point No.</u>	<u>Latitude</u>	<u>Longitude</u>	
1	(b) (4)		Original claim, 1979
	(b) (4)		
2	(b) (4)		Original claim, 1979
	(b) (4)		

3,000 yards from any point on a line created by the following two points:

3	(b) (4)		Amendment, 2002
	(b) (4)		
4	(b) (4)		Amendment, 2002
	(b) (4)		

**5.9.4 Current FKNMS Margarita Certification Area:**

1. Within a box bounded by the following coordinates (box 1):

<u>Point No.</u>	<u>Latitude</u>	<u>Longitude</u>	
1	(b) (4)		
2	(b) (4)		
3	(b) (4)		
4	(b) (4)		

2. Within a box bounded by the following coordinates (box 2):

<u>Point No.</u>	<u>Latitude</u>	<u>Longitude</u>	
1	(b) (4)		
2	(b) (4)		
3	(b) (4)		
4	(b) (4)		

3. Within 600 yards on either side of a line created by connecting the following coordinates:

<u>Point No.</u>	<u>Latitude</u>	<u>Longitude</u>	
1	(b) (4)		
2	(b) (4)		

## 5.10 FIELDWORK METHODOLOGY AND THE RATIONALE FOR ITS SELECTION

To conform to the reporting requirements as stated in 1A-46 of the Florida Administrative Code, we redirect reviewers to what has been previously covered in this report in sections 4.14 -4.20 inclusive.

We would like to, once again point out that we are ordered by the US Federal Admiralty Court of the Southern District of Florida, to diligently recover the remains of the *Atocha* and the *Santa Margarita, 1622*, until such time that salvage is no longer practical.

While this is the case law and orders that we operate under, we have sought to always comply with both the “best practices of archaeology appropriate to the conditions of these sites.” We have appreciated and taken into consideration input and guidance from the Florida Keys National Marine Sanctuary and have adopted methodologies that minimize any potential environmental impacts during our activities. For both archaeological and environmental situations, we have either adopted or adapted to the special conditions on the sites.

Please see sections 4.14 through section 4.20 of the document for a more complete review of methodologies employed by Motivation Inc. in the ongoing investigations and recovery of the remains of these two important historical vessels.

The rationale for the selection of methodologies employed on these shipwrecks is relatively straight forward. The methodologies are predicated on the scattered nature of these shipwreck remains and the depositional environment. The recovery methods we employ are proven methodologies that have resulted in the success of both projects, as evidenced in the amounts and types of material recovered. The methodologies are used in a judicious manner dependent on the environment and the bottom composition.

## 5.11 THE CHARTED LOCATIONS OF ALL EXCAVATIONS, ARTIFACTS, SIGNIFICANT DISCOVERIES, SITE BOUNDARIES AND SURVEY TARGETS

“Charts of the *Atocha* Site & Margarita” which shows a graphical representation of all excavation areas to date. All excavations are recorded on each ship’s “Daily Log Sheet” and entered into Motivation’s master database.

### Charts of the *Atocha* & Margarita Wreck Sites

By Gary Randolph

NOAA Chart showing Admiralty Claims and NOAA Certification Areas (red)

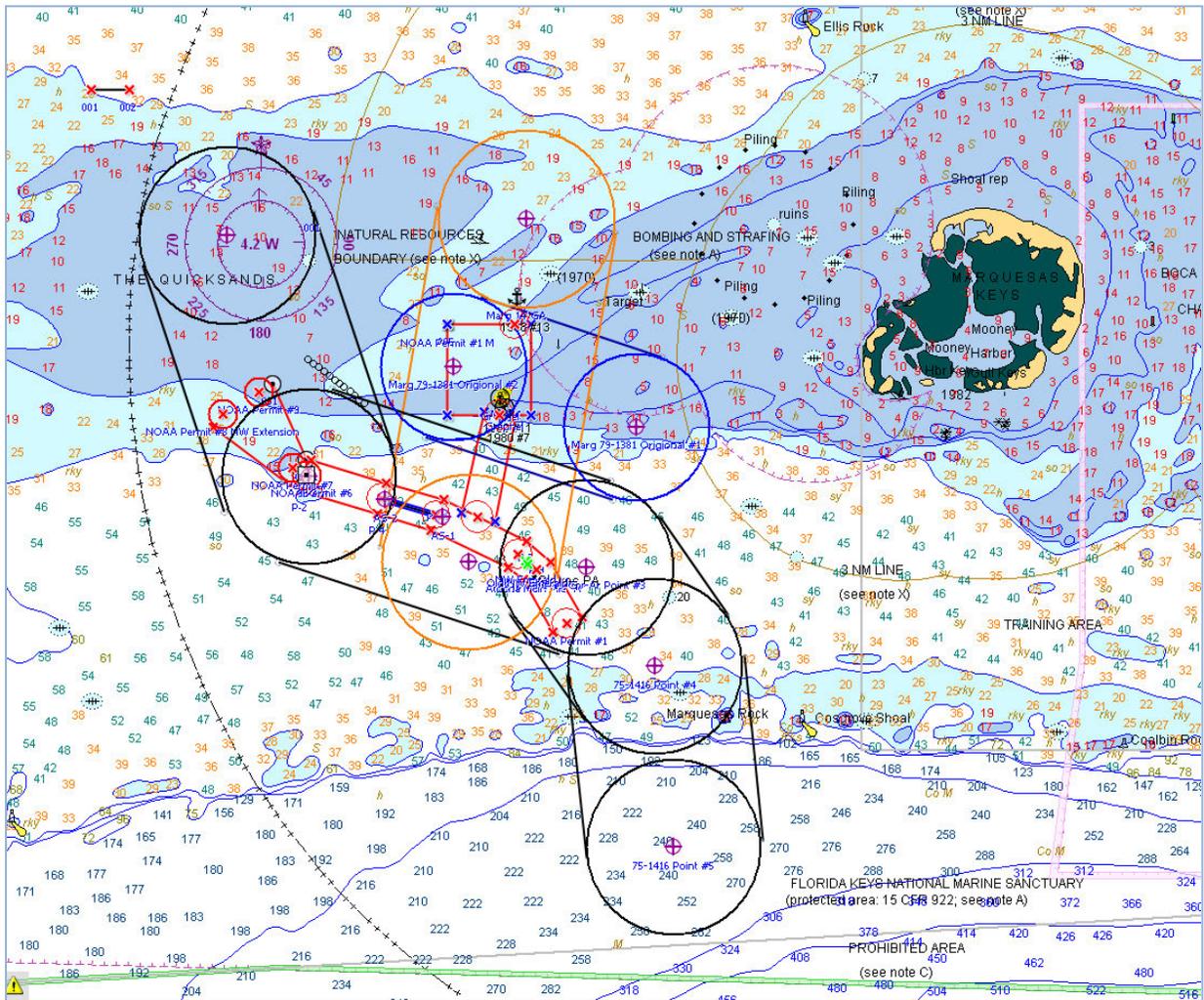
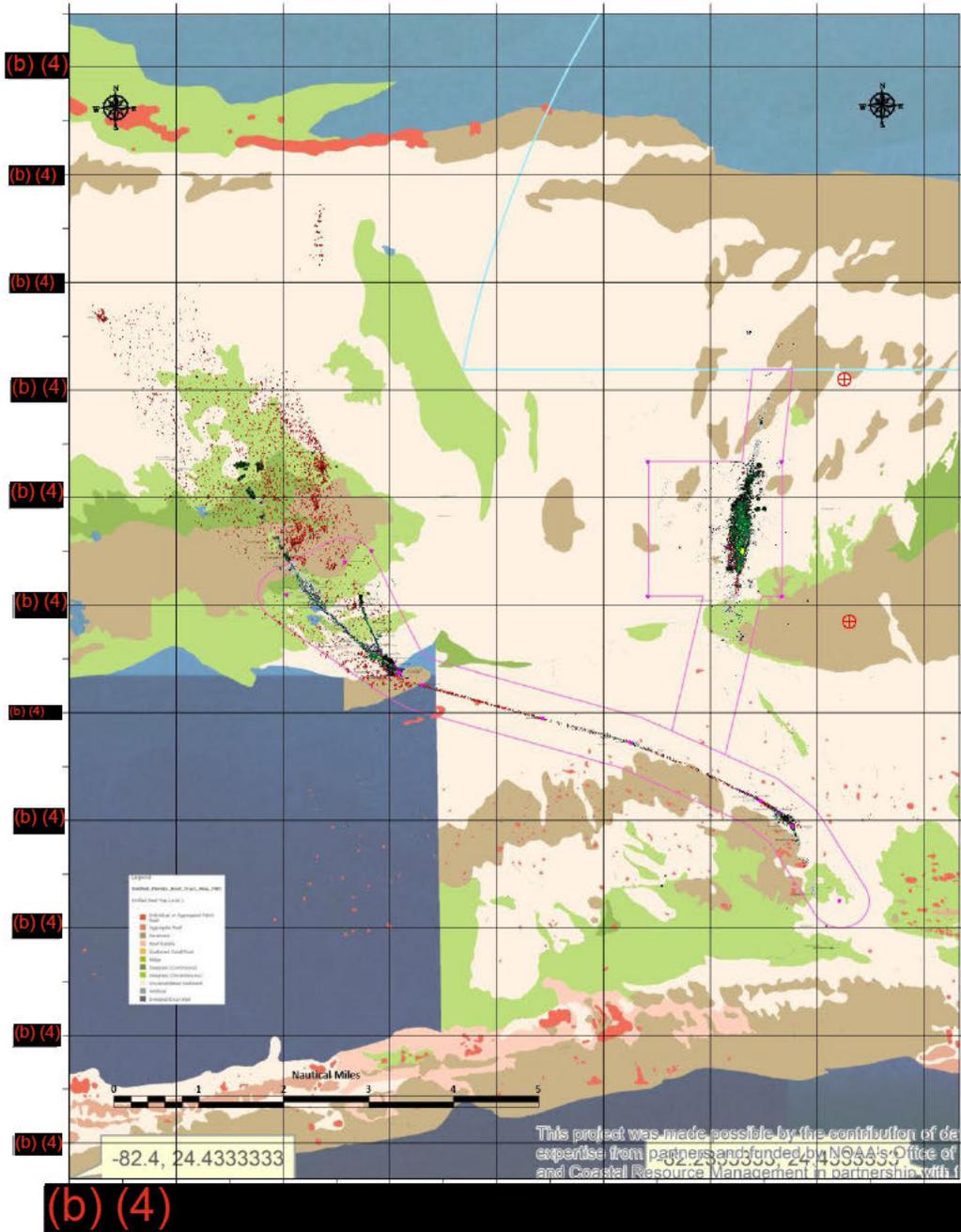


Chart Name: U11439  
 Description: UNITED STATES - GULF COAST. FLORIDA. SAND KEY TO REBECCA SHOAL.  
 WF Issue: 24  
 Source Scale: 1:80000  
 Horizontal Datum: WGS-84

5.11.1 Overall Site Chart with artifacts, excavations, magnetometer targets, Florida Fish and Wildlife Conservation Commission (FWC) benthic habitat layer (FWC mapping project 2005-2014) [Unified Florida Reef Tract Map \(v 1.1\)](#)

MEL FISHER'S  
TREASURES

# Atocha & Margarita Wreck Sites



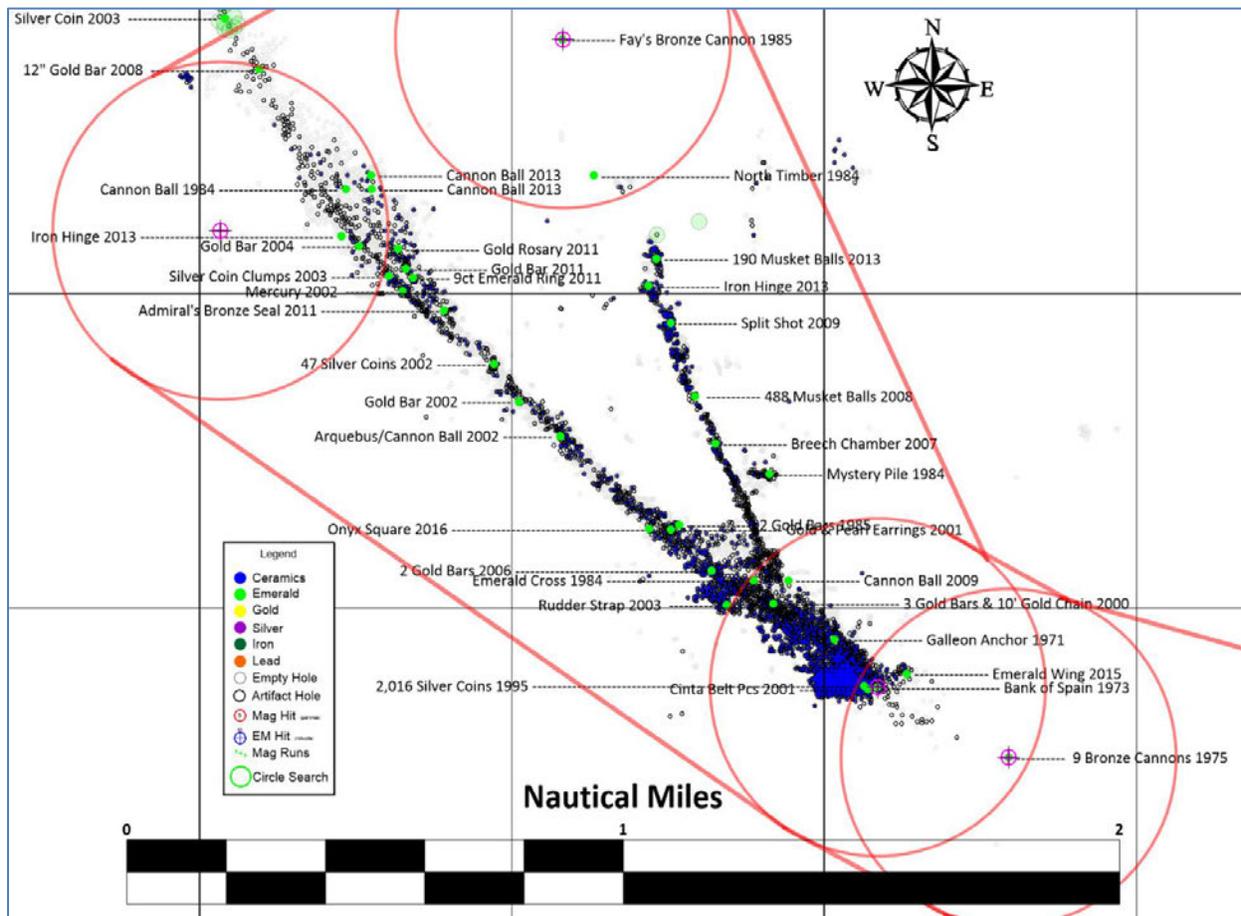
Site: Atocha & Margarita Wreck Sites  
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 Projection: Unprojected Lat/Lon  
 Lat/Lon Format: dd.mmm

Projection: Unprojected Lat/Lon  
 Datum: World Geodetic System 1984  
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 Elevation: 100000  
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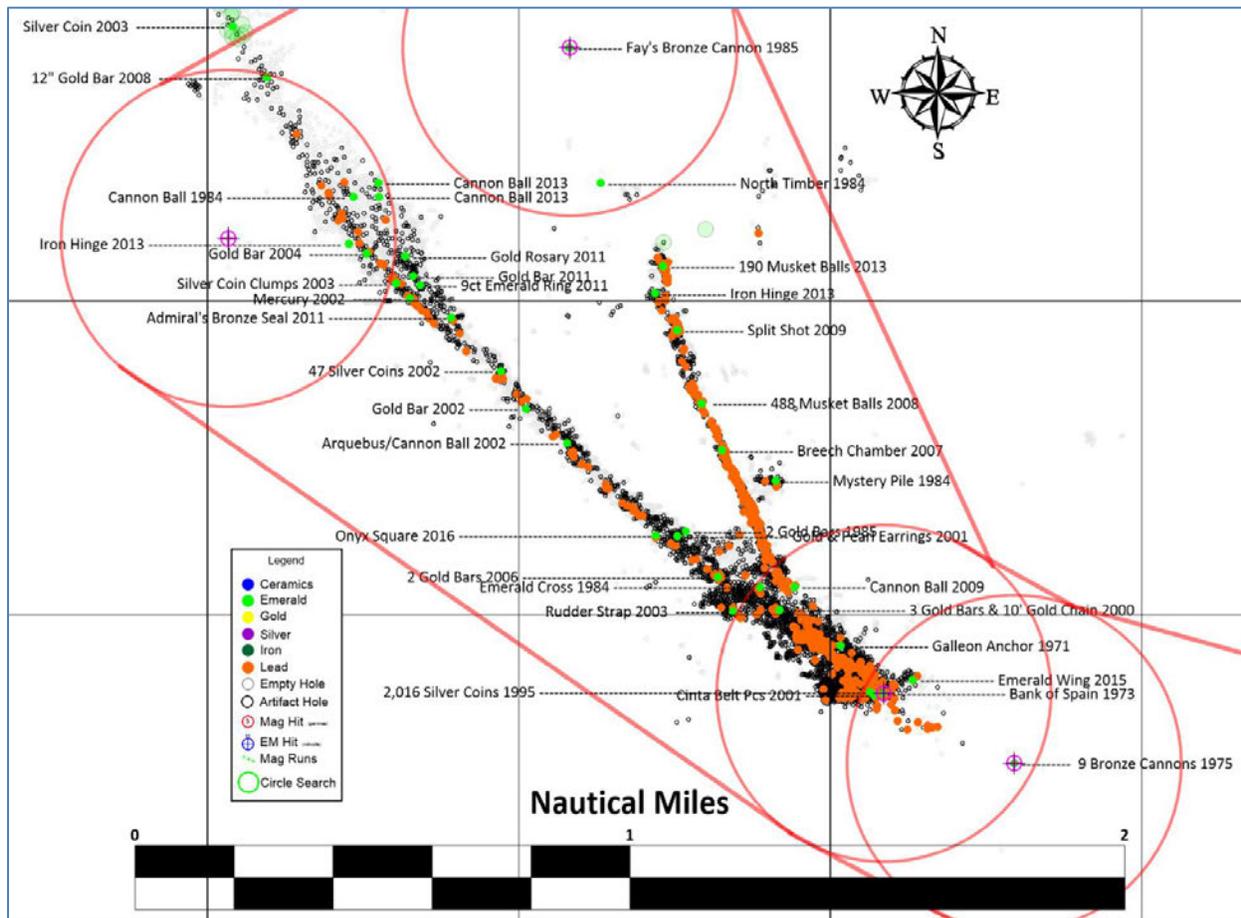


The following charts show the various artifact “types” and their scatter and dispersal patterns within the *Quicksands* area of the *Atocha* wreck site.

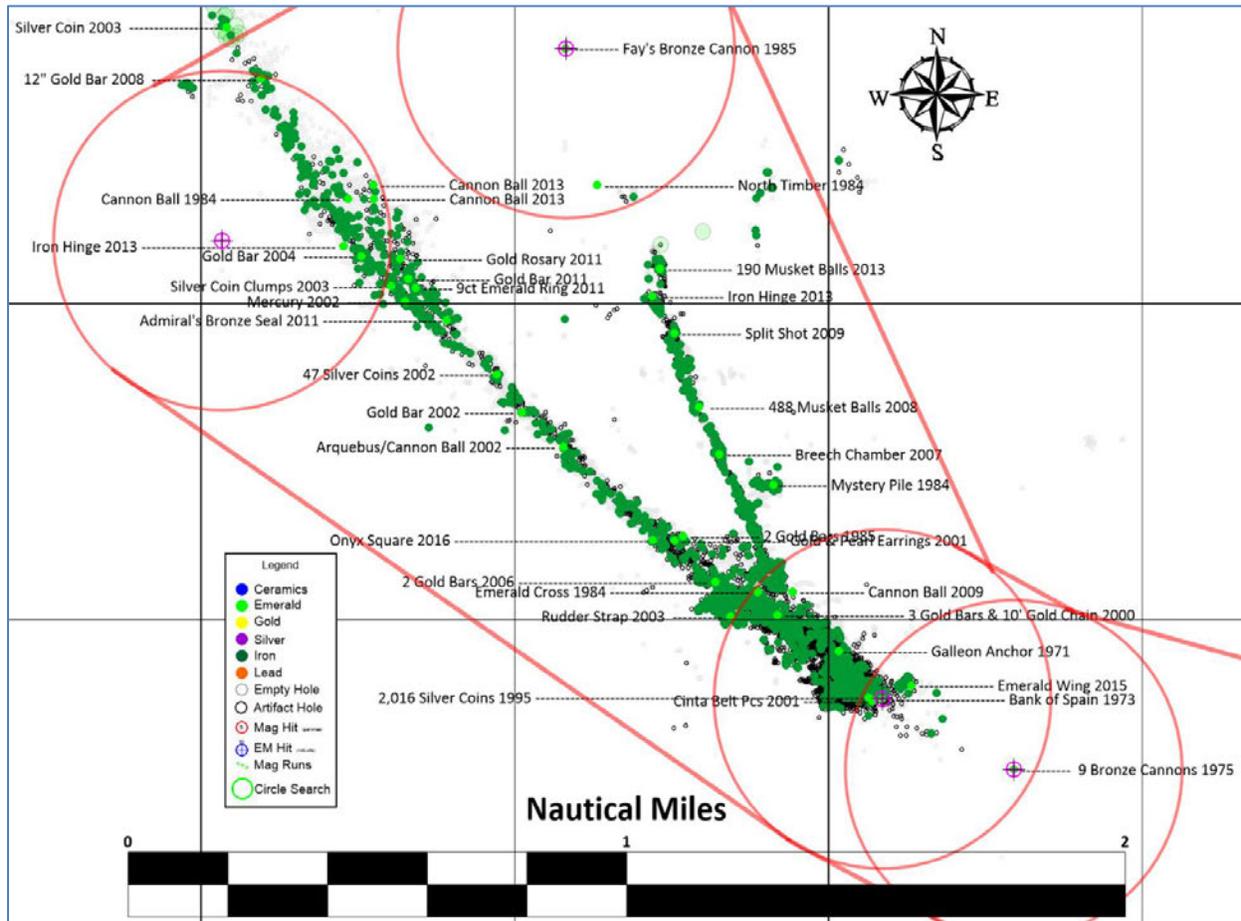
### 5.11.3 Atocha Ceramic Artifacts



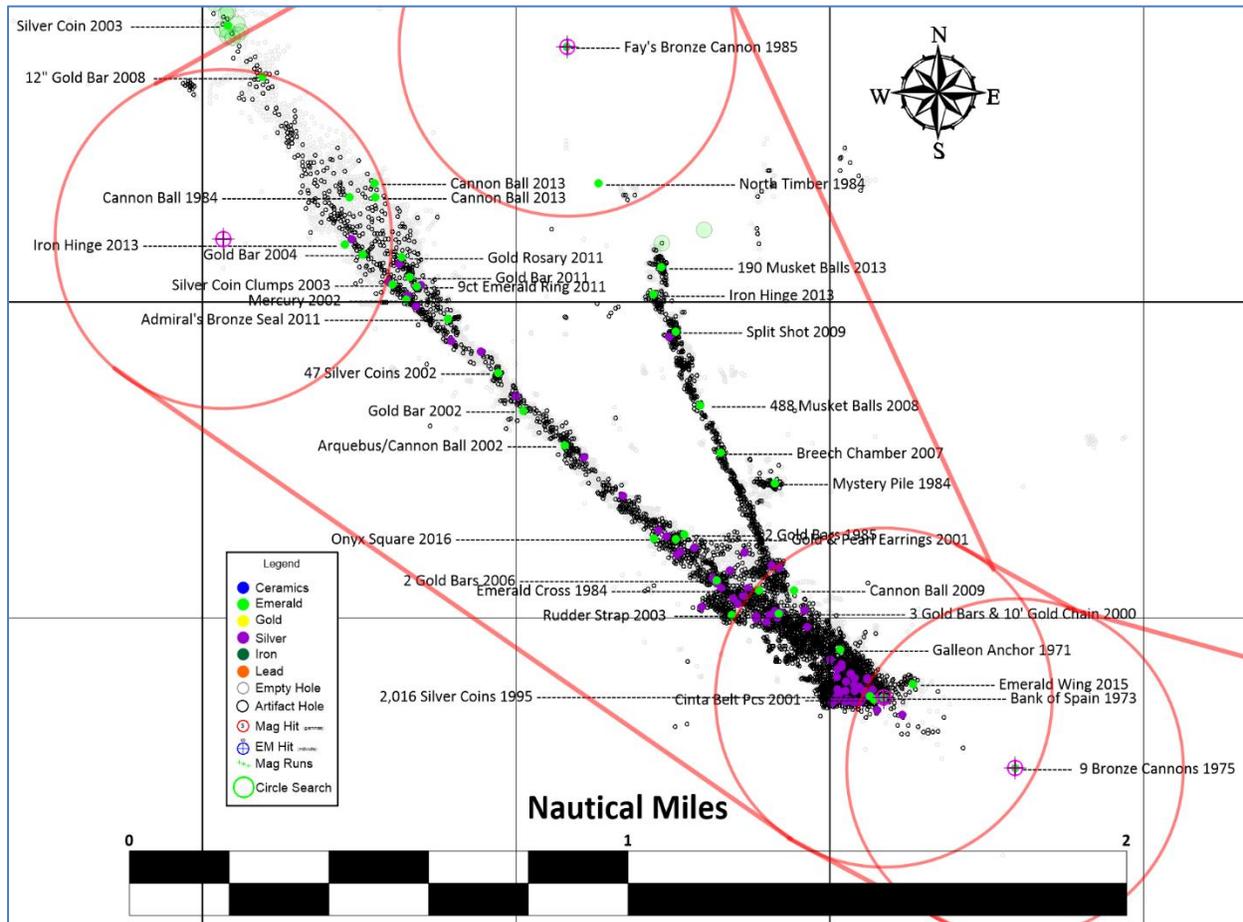
### 5.11.4 Atocha Lead Artifacts



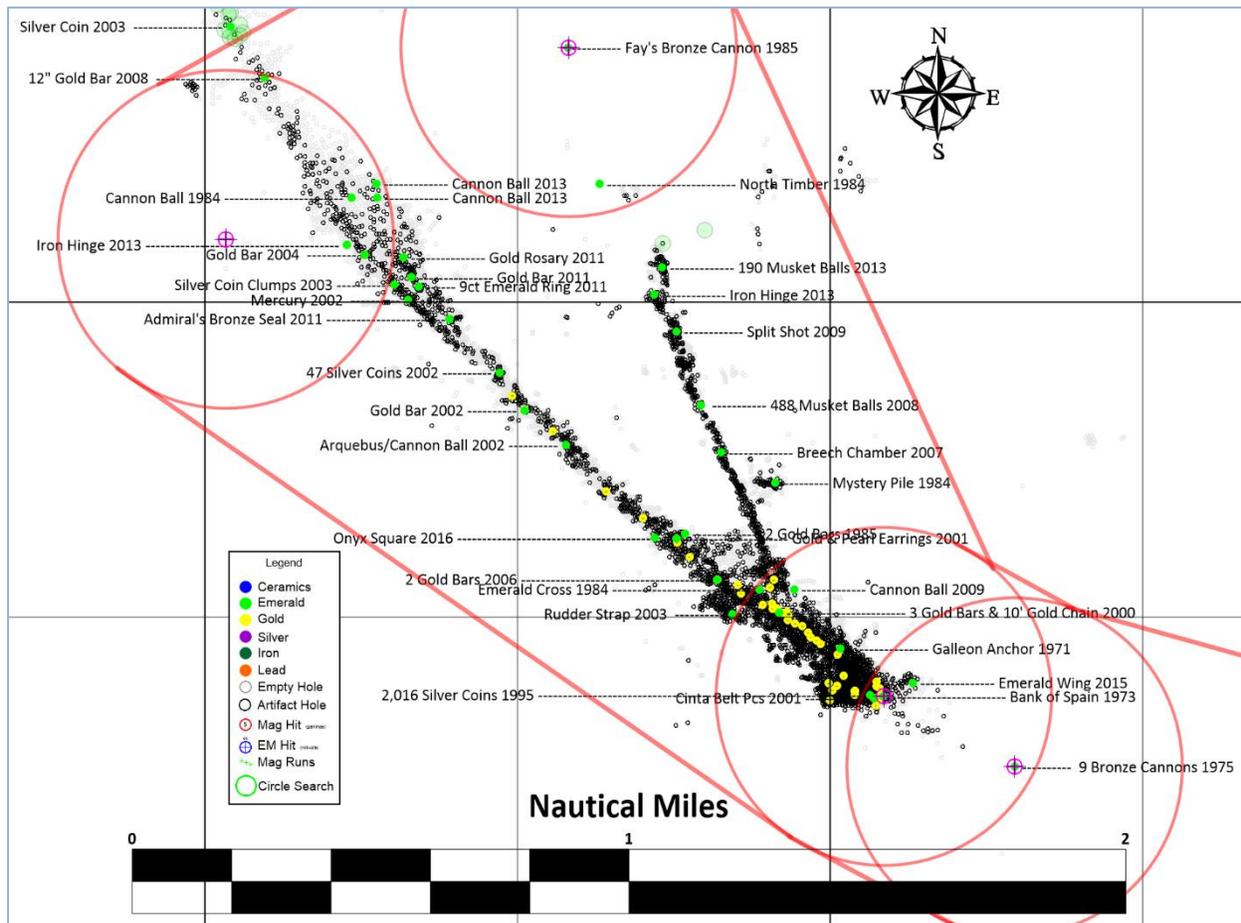
### 5.11.5 Atocha Iron Artifacts



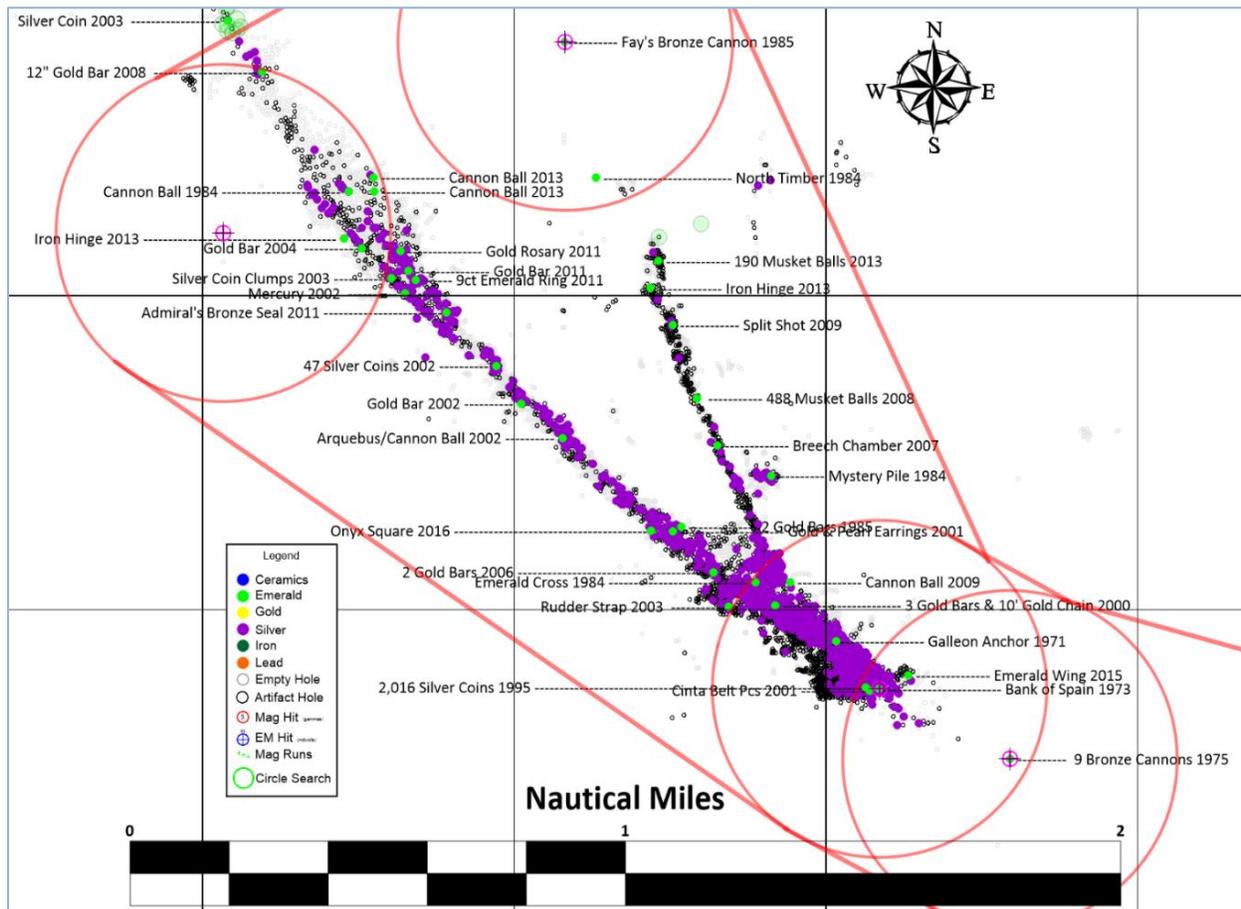
### 5.11.6 Atocha Silver Artifacts



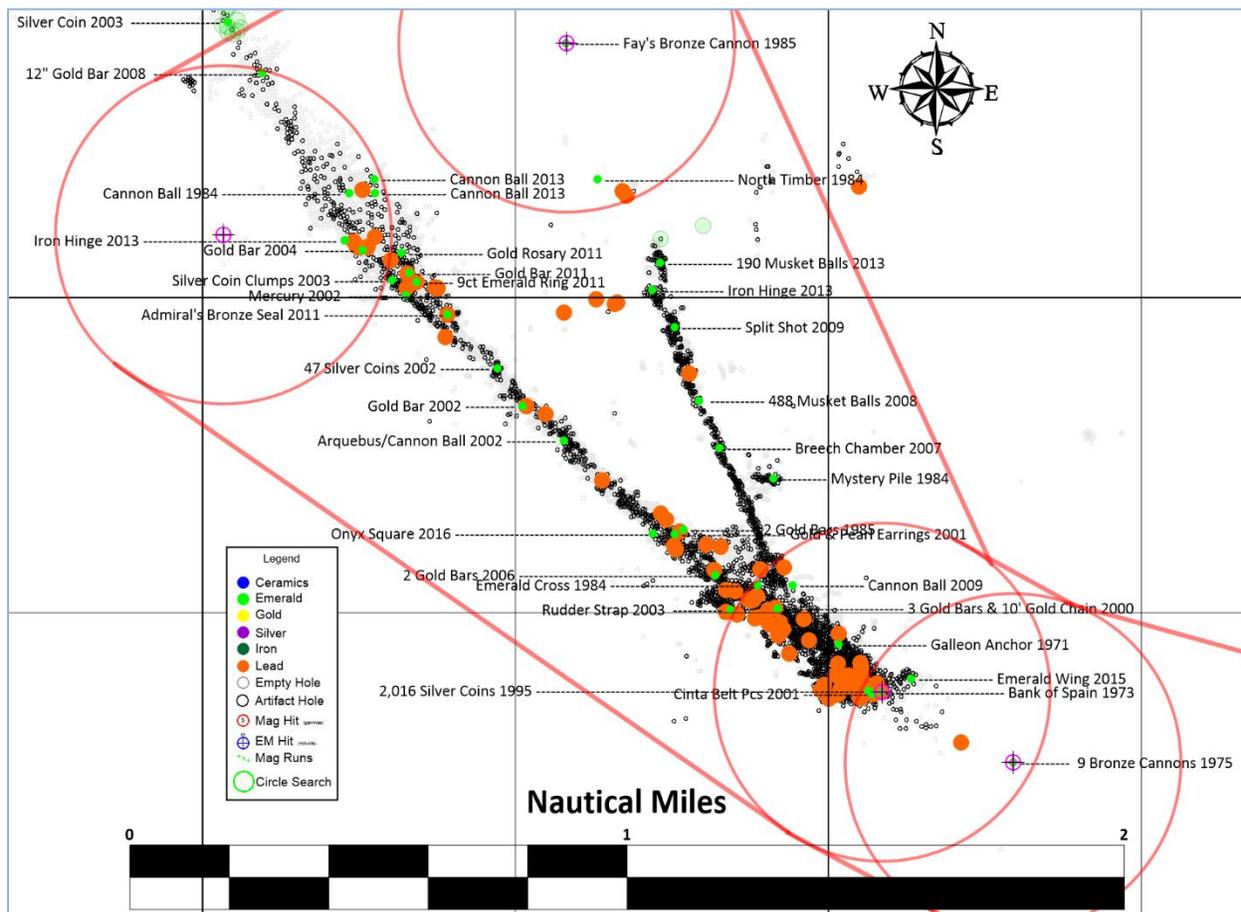
### 5.11.7 Atocha Gold Artifacts



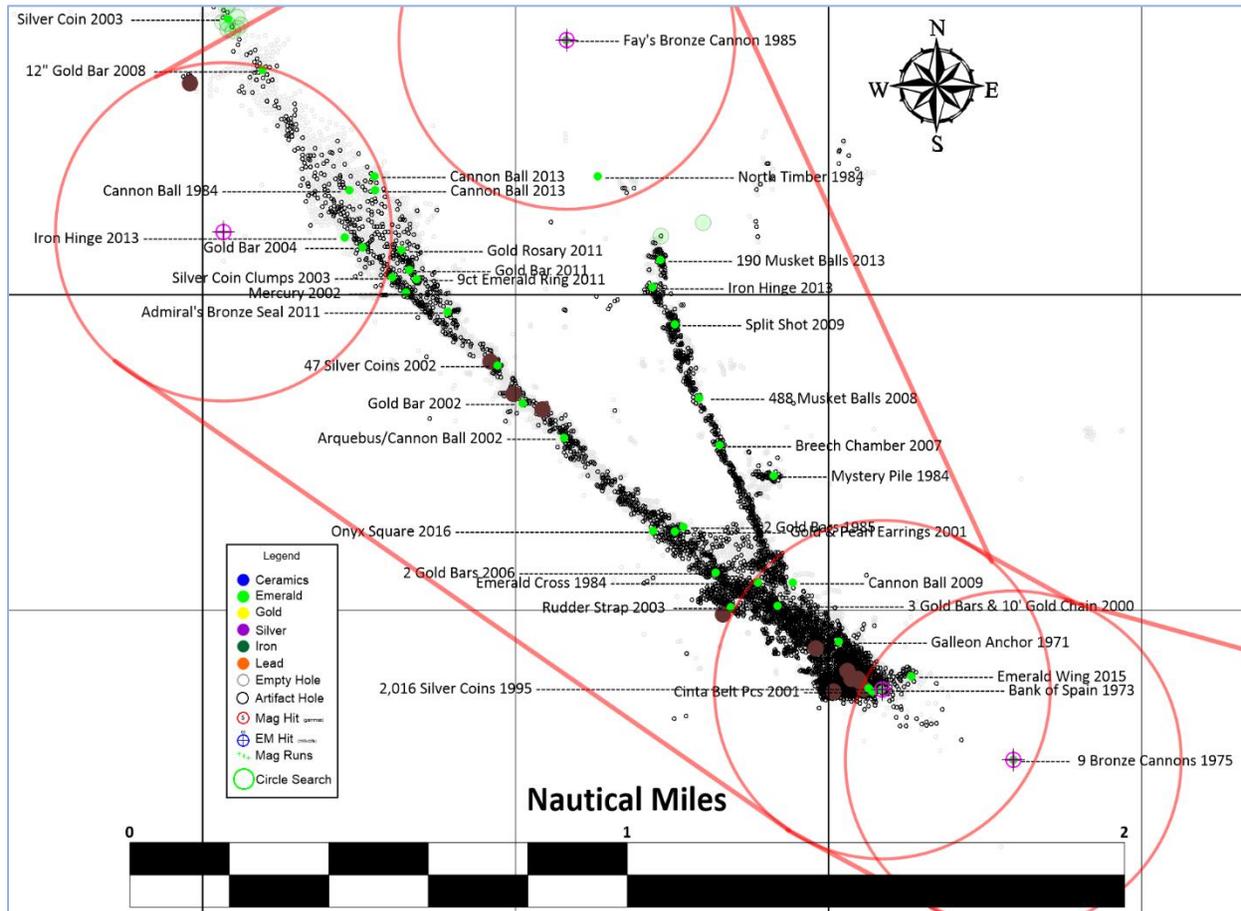
### 5.11.8 Atocha Silver Coins



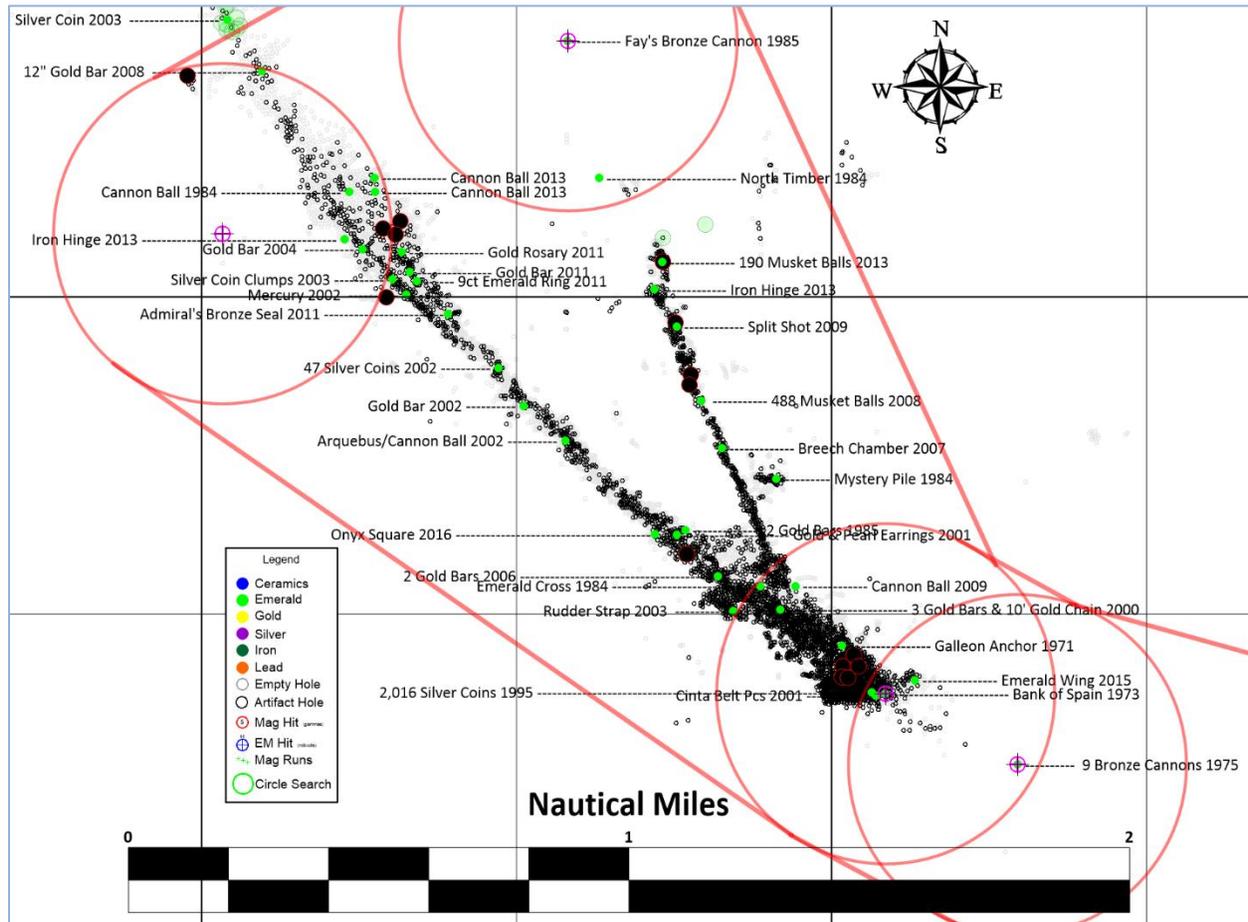
### 5.11.9 Atocha Copper Artifacts



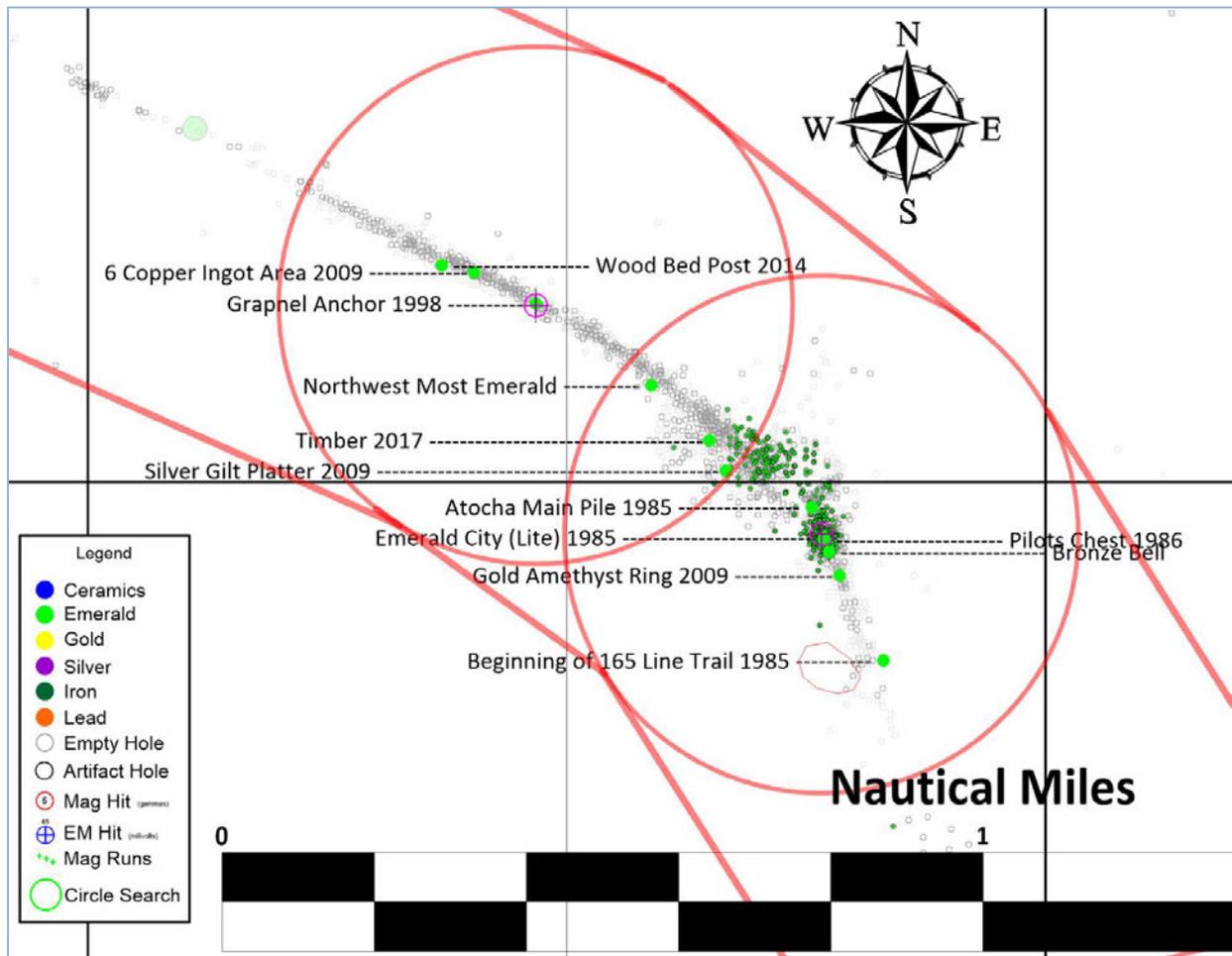
### 5.11.10 Atocha Wood Artifacts



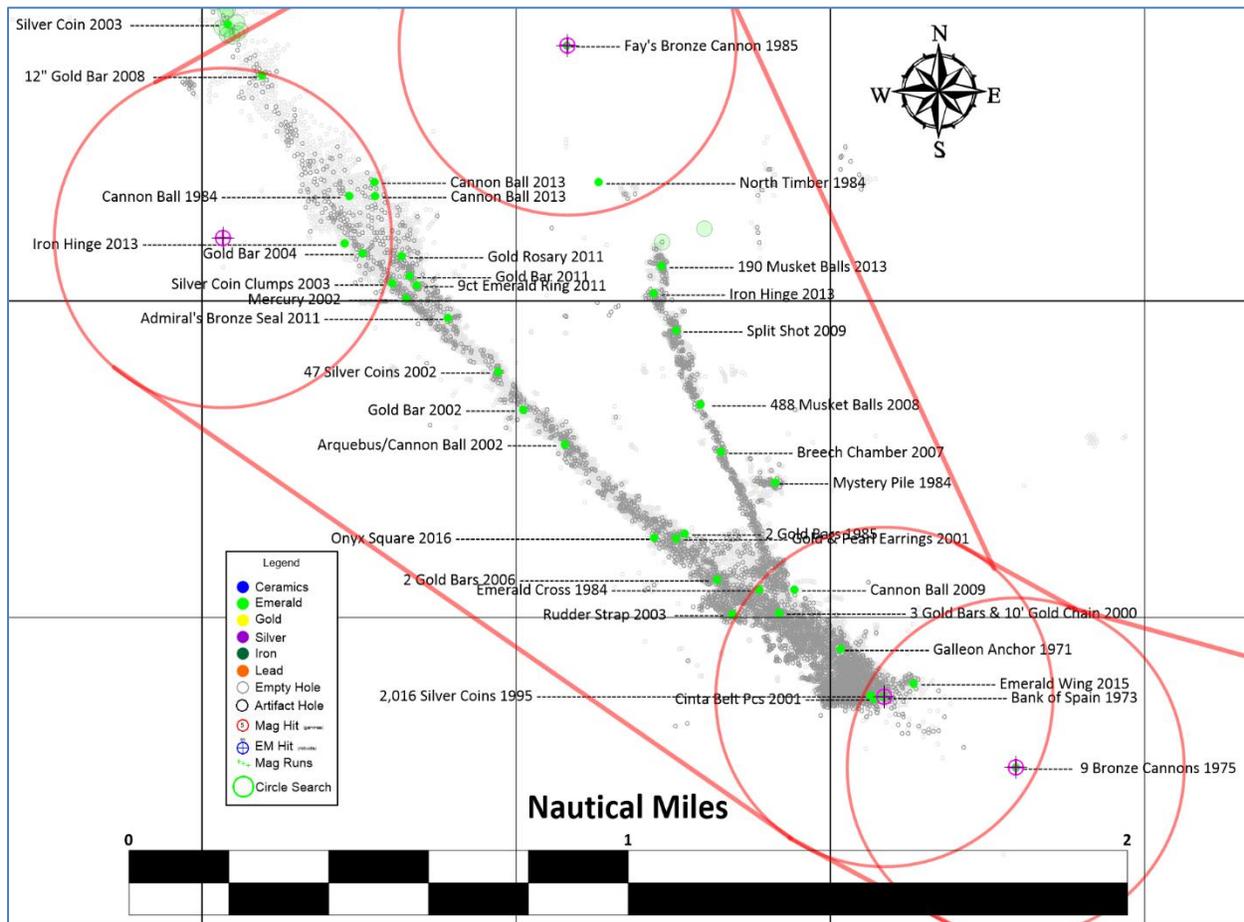
### 5.11.11 Atocha Animal Bones



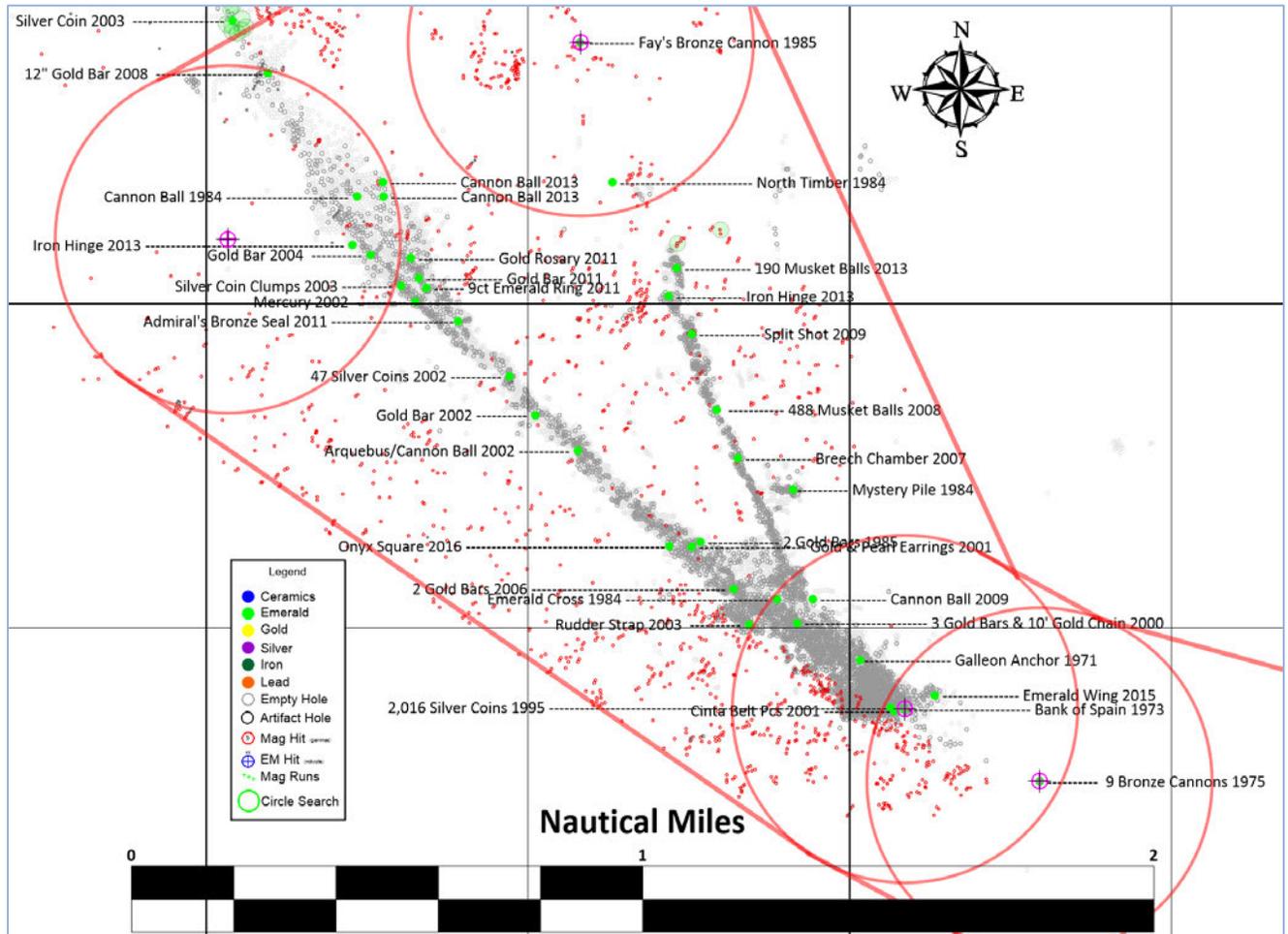
5.11.12 Atocha Emerald City Areas



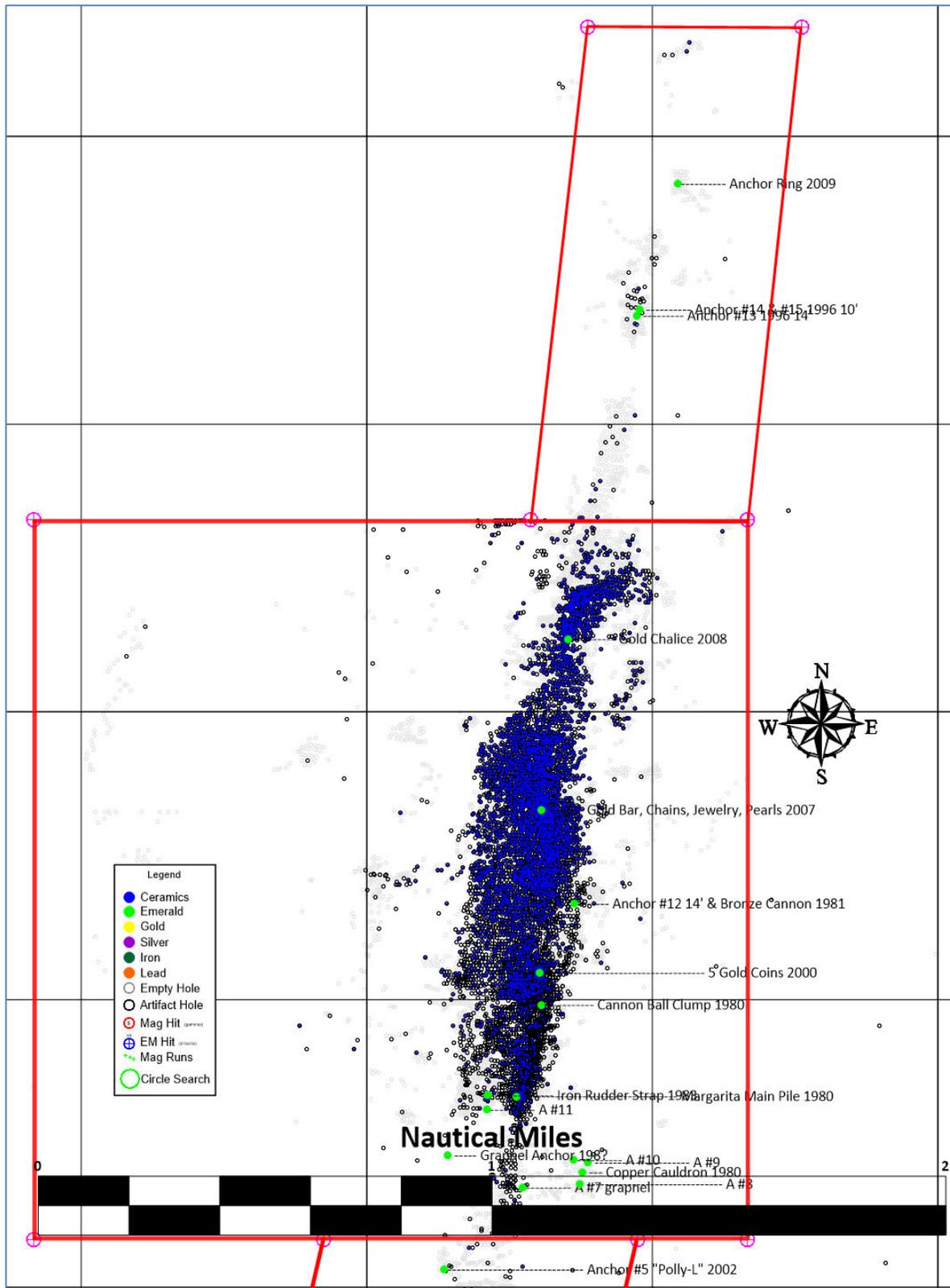
### 5.11.13 Atocha Excavation & Circle Search Areas Only



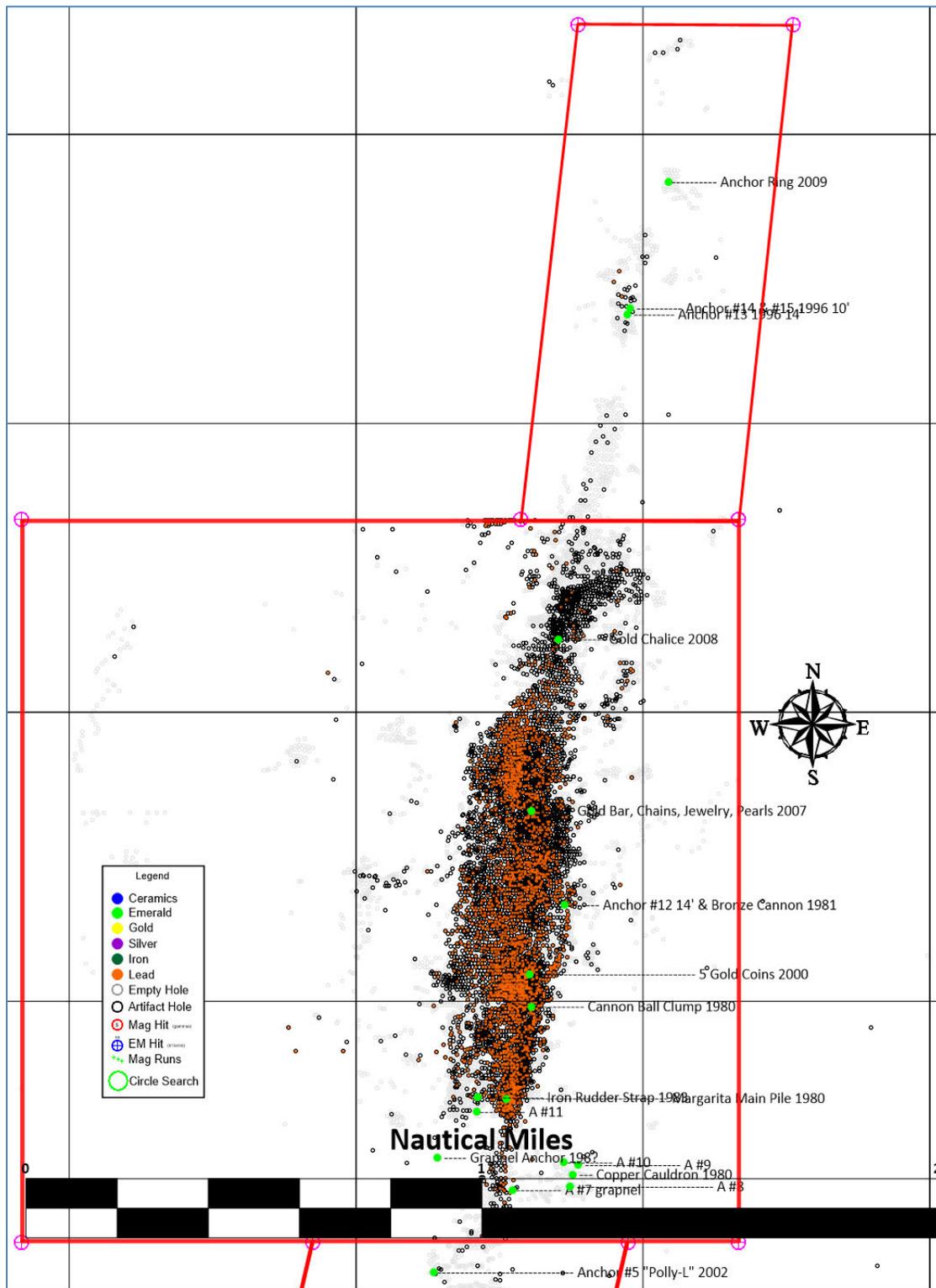
### 5.11.14 Atocha Magnetometer Targets - Quicksands



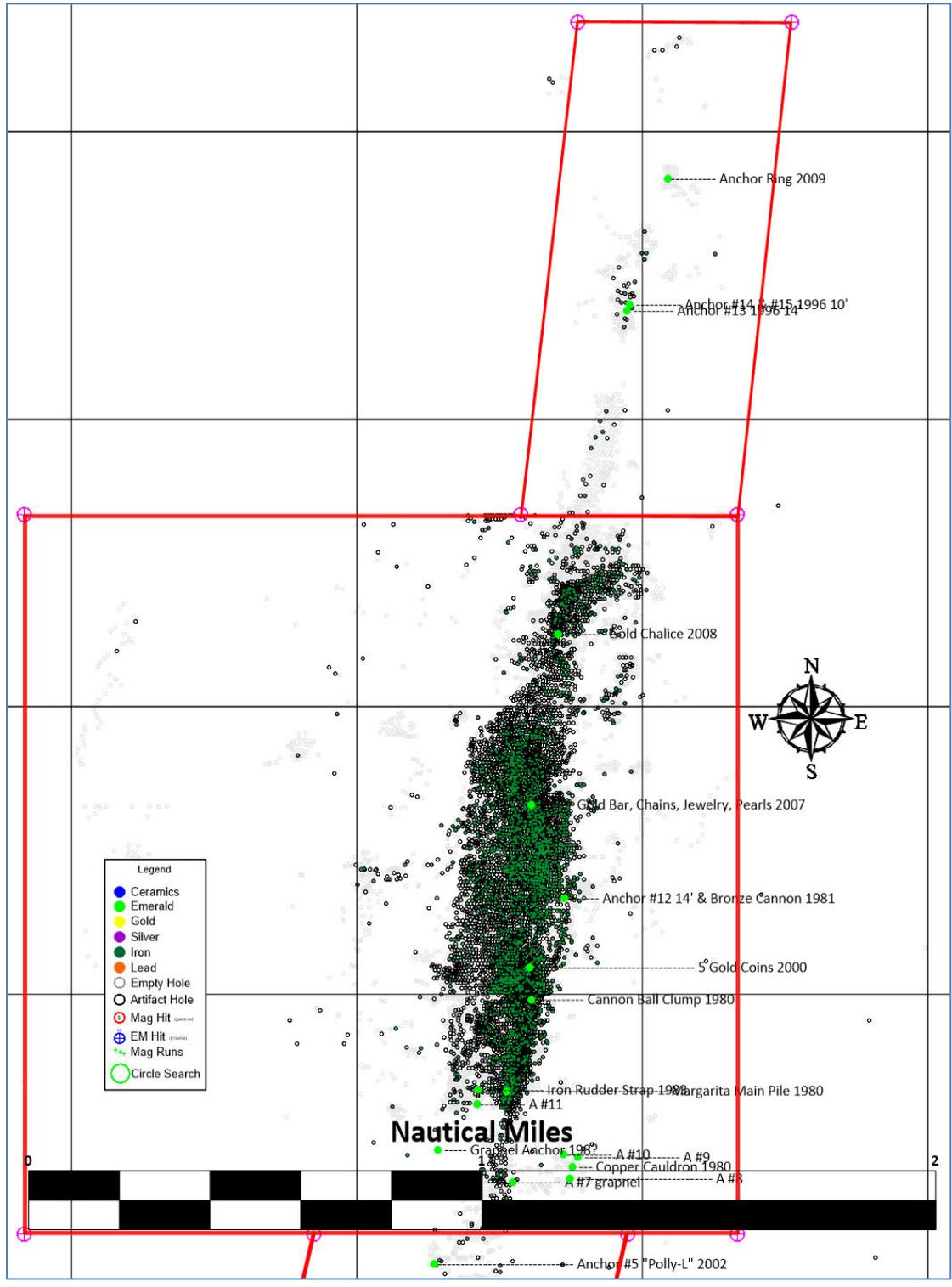
5.11.15 Margarita Ceramic Artifacts



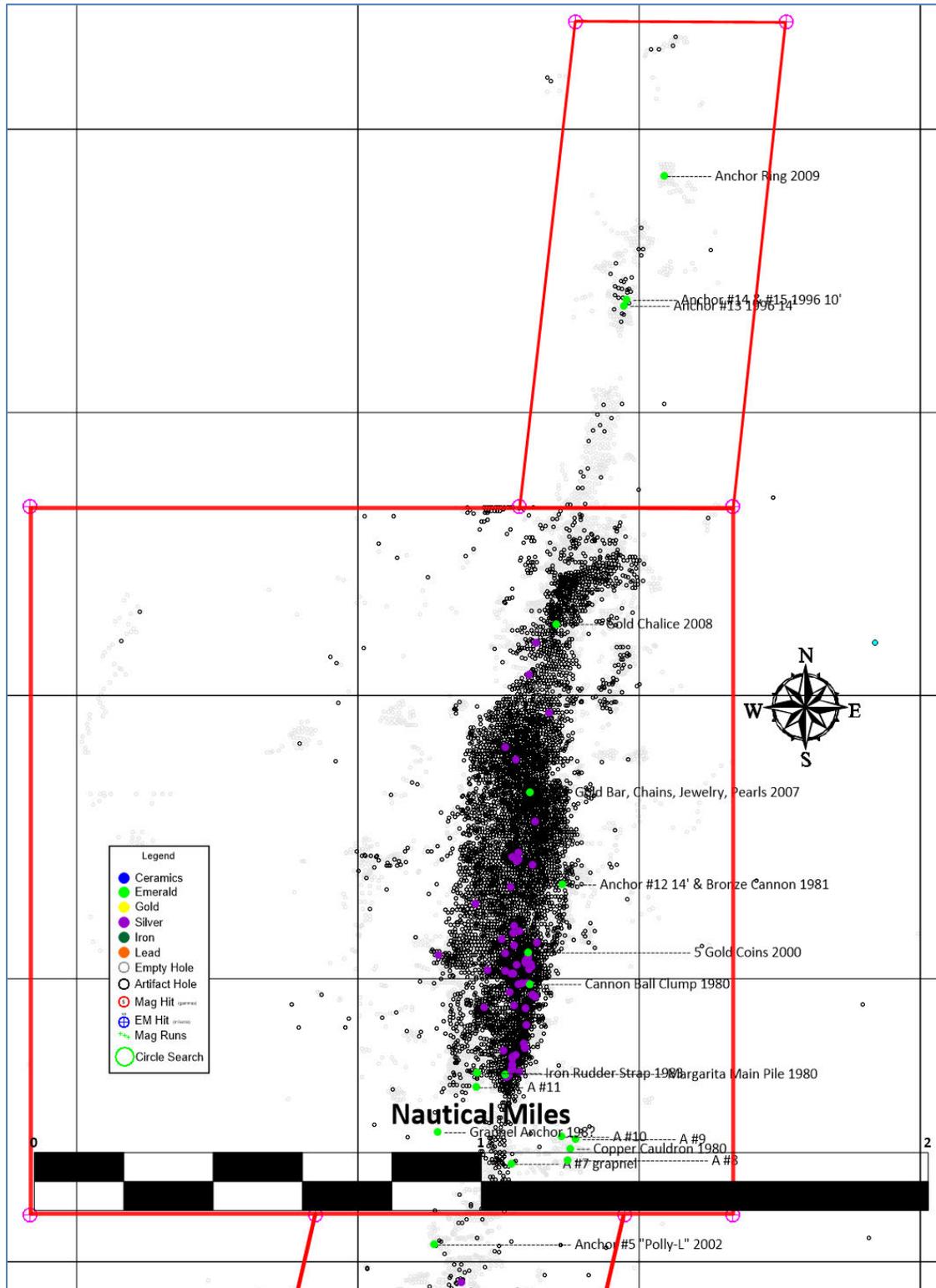
### 5.11.16 Margarita Lead Artifacts



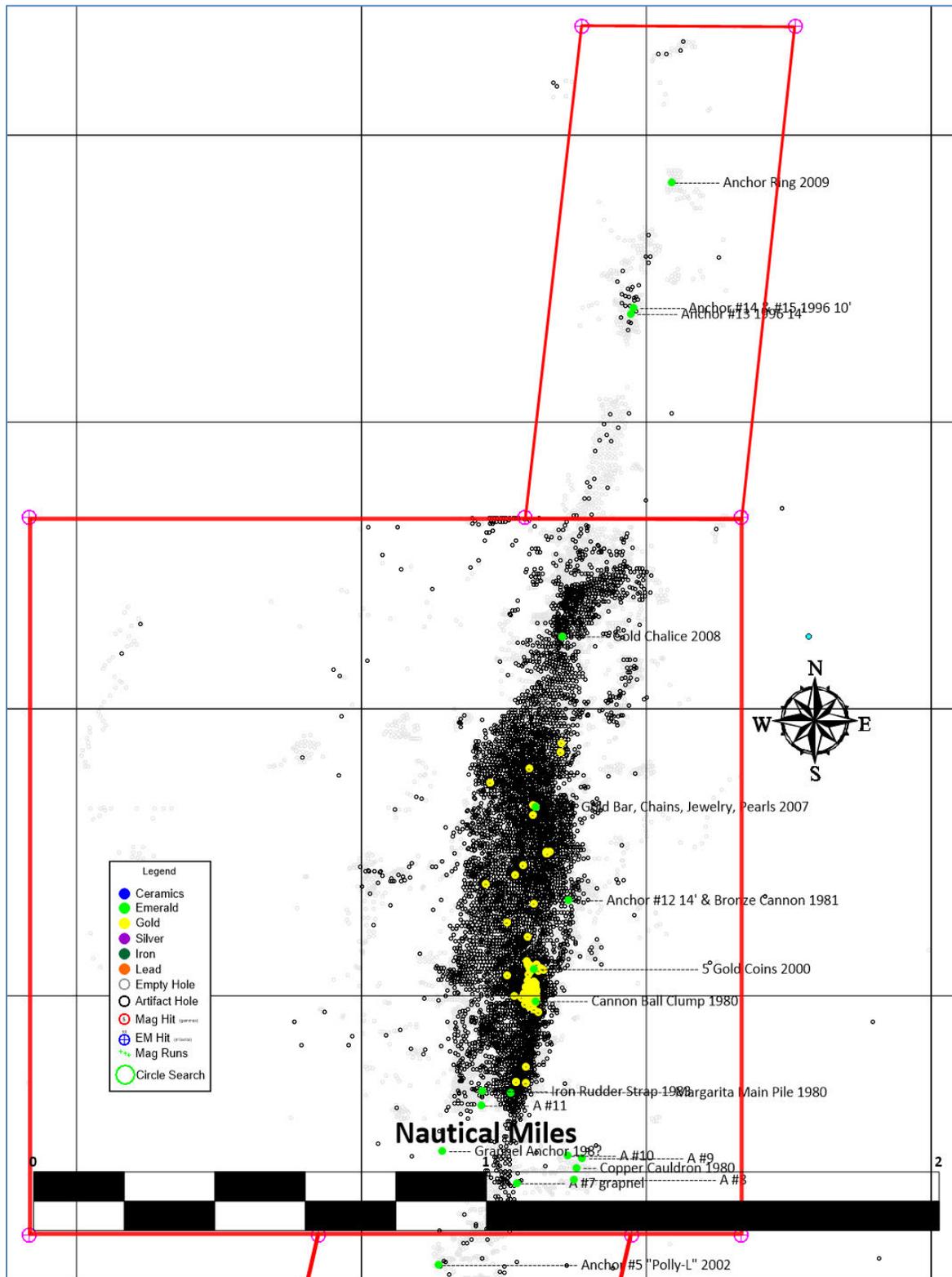
### 5.11.17 Margarita Iron Artifacts



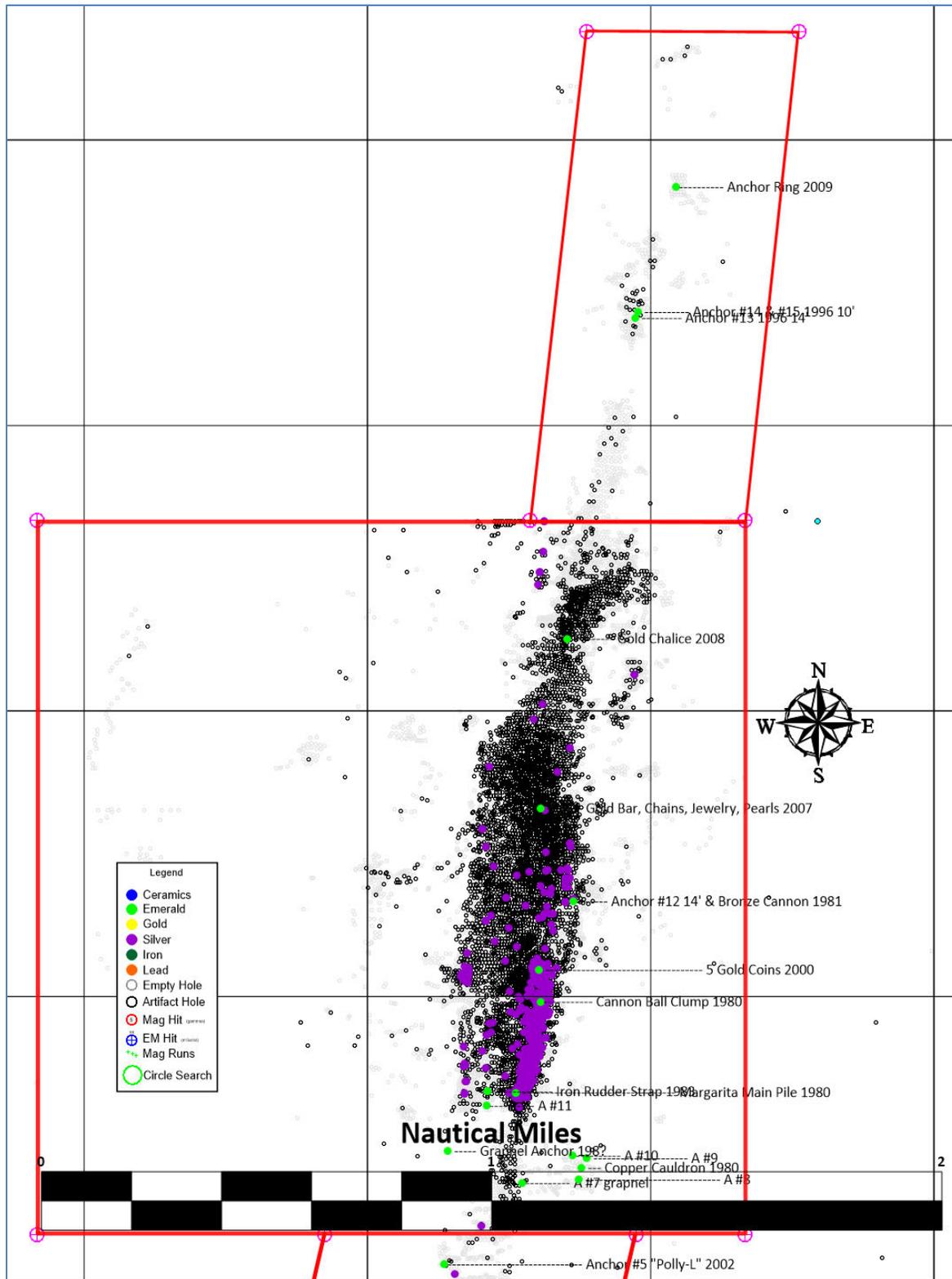
## 5.9.16 Margarita Silver Artifacts



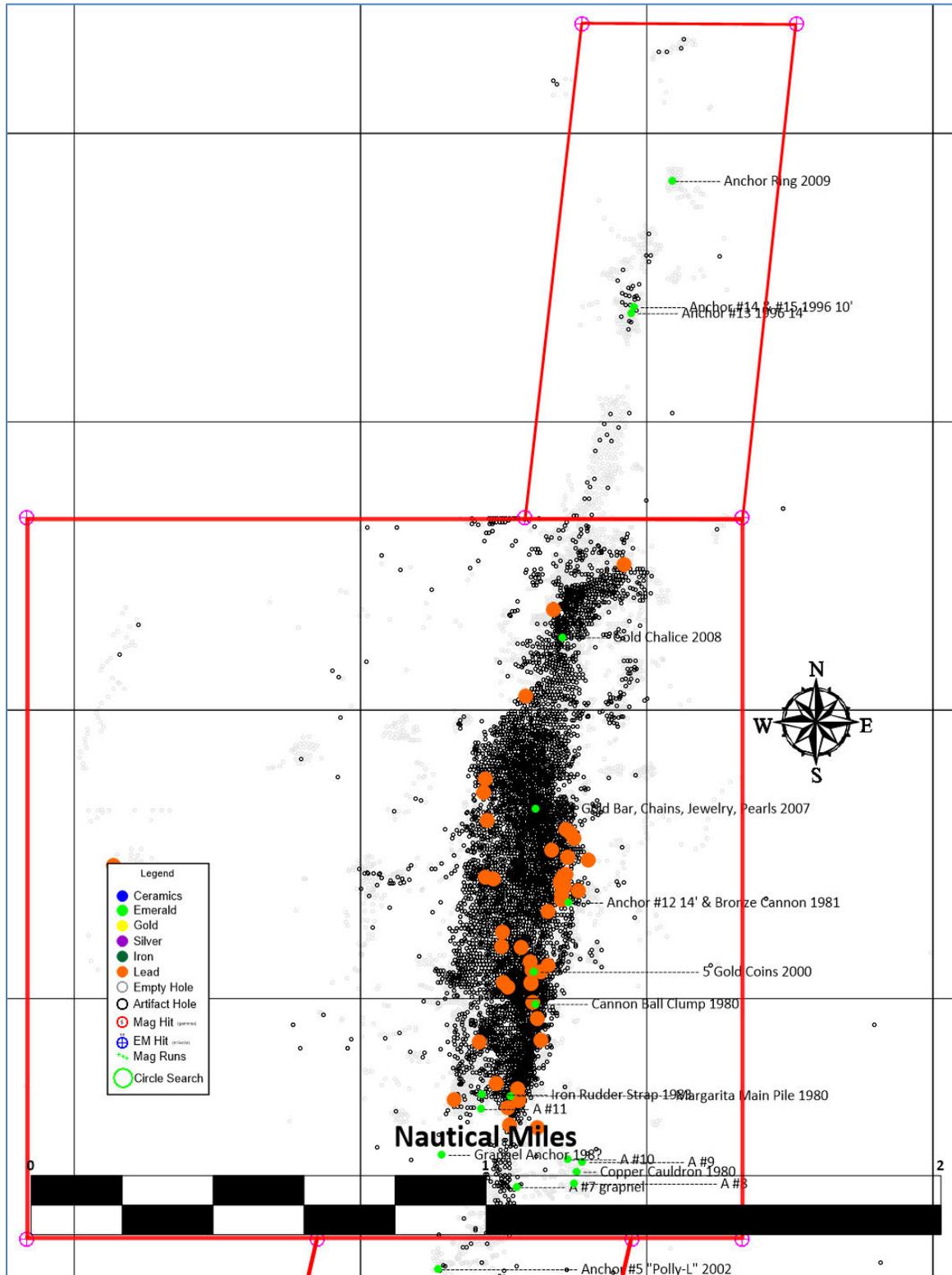
5.11.18 Margarita Gold Artifacts



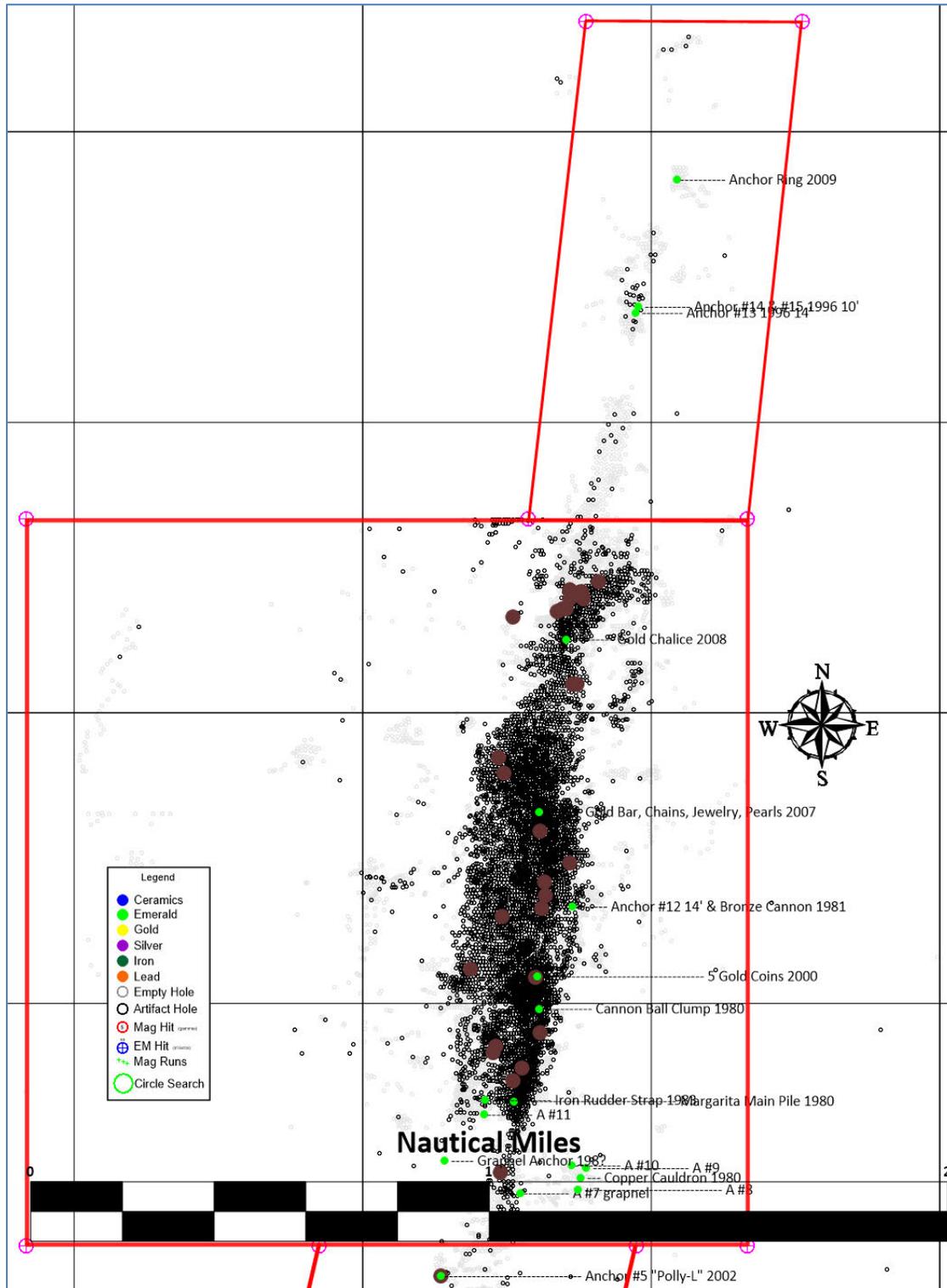
5.11.19 Margarita Silver Coins



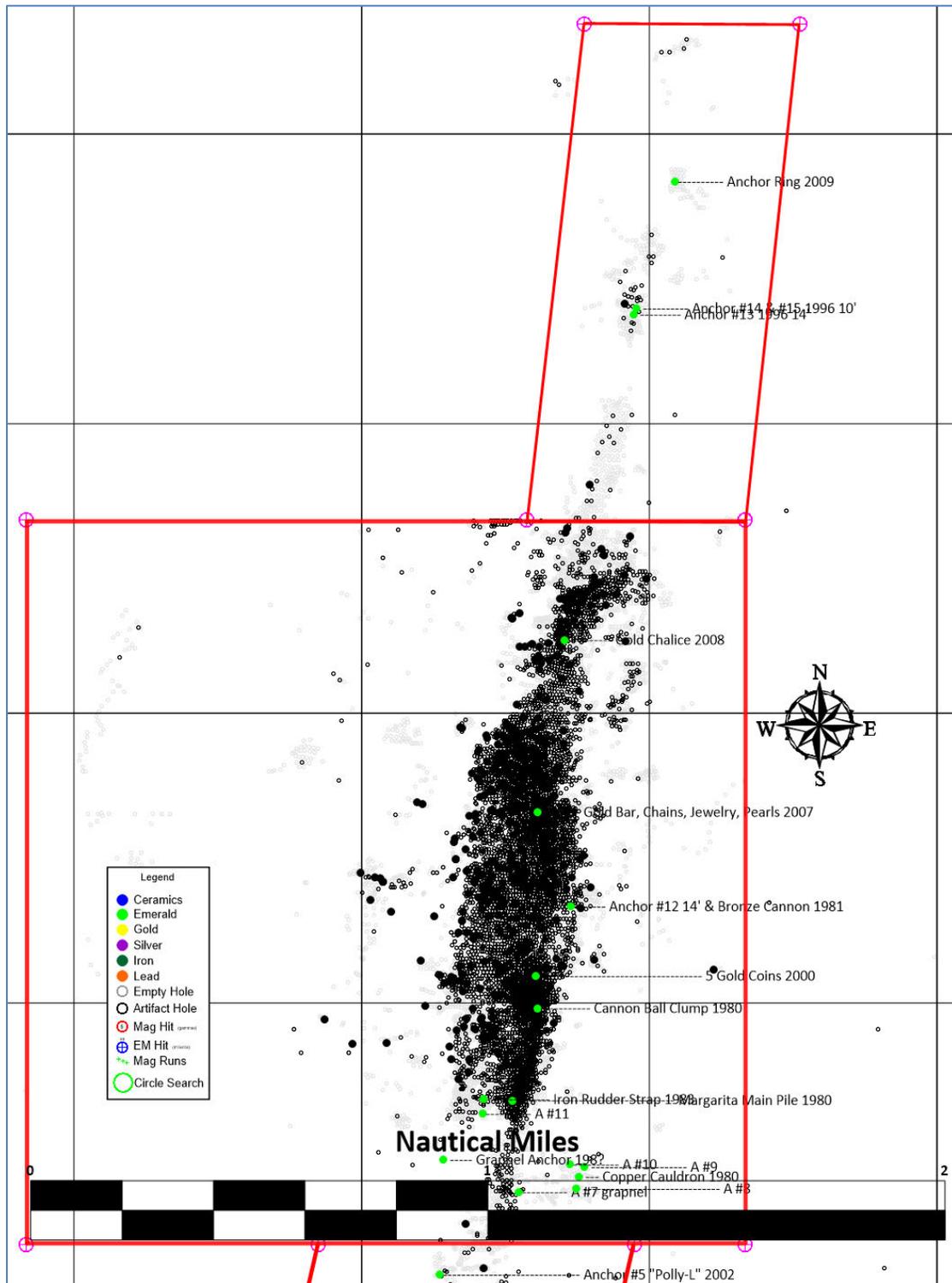
## 5.11.20 Margarita Copper Artifacts



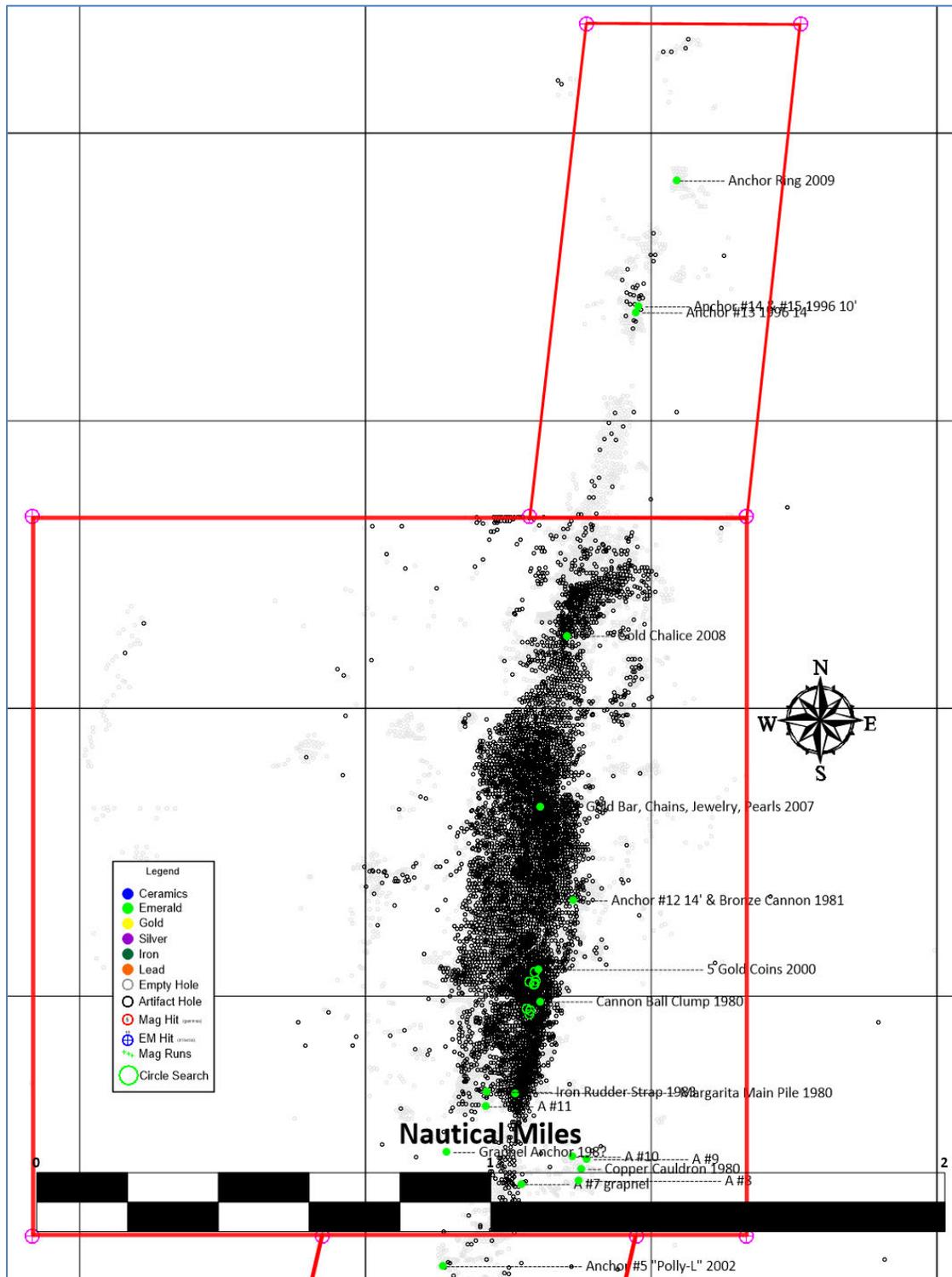
### 5.11.21 Margarita Wood Artifacts



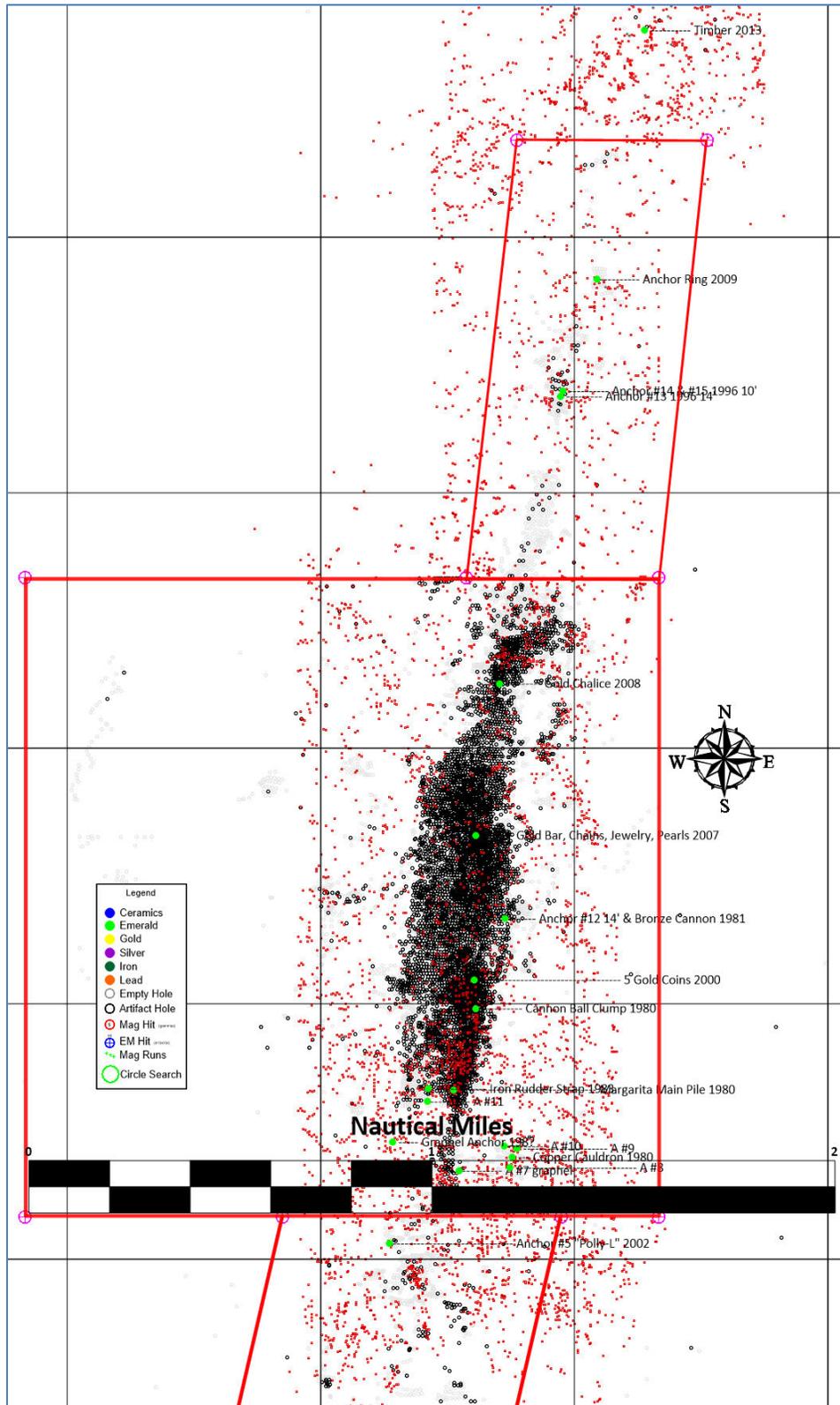
5.11.22 Margarita Animal Bones



5.11.23 Margarita Excavation & Circle Search Areas Only

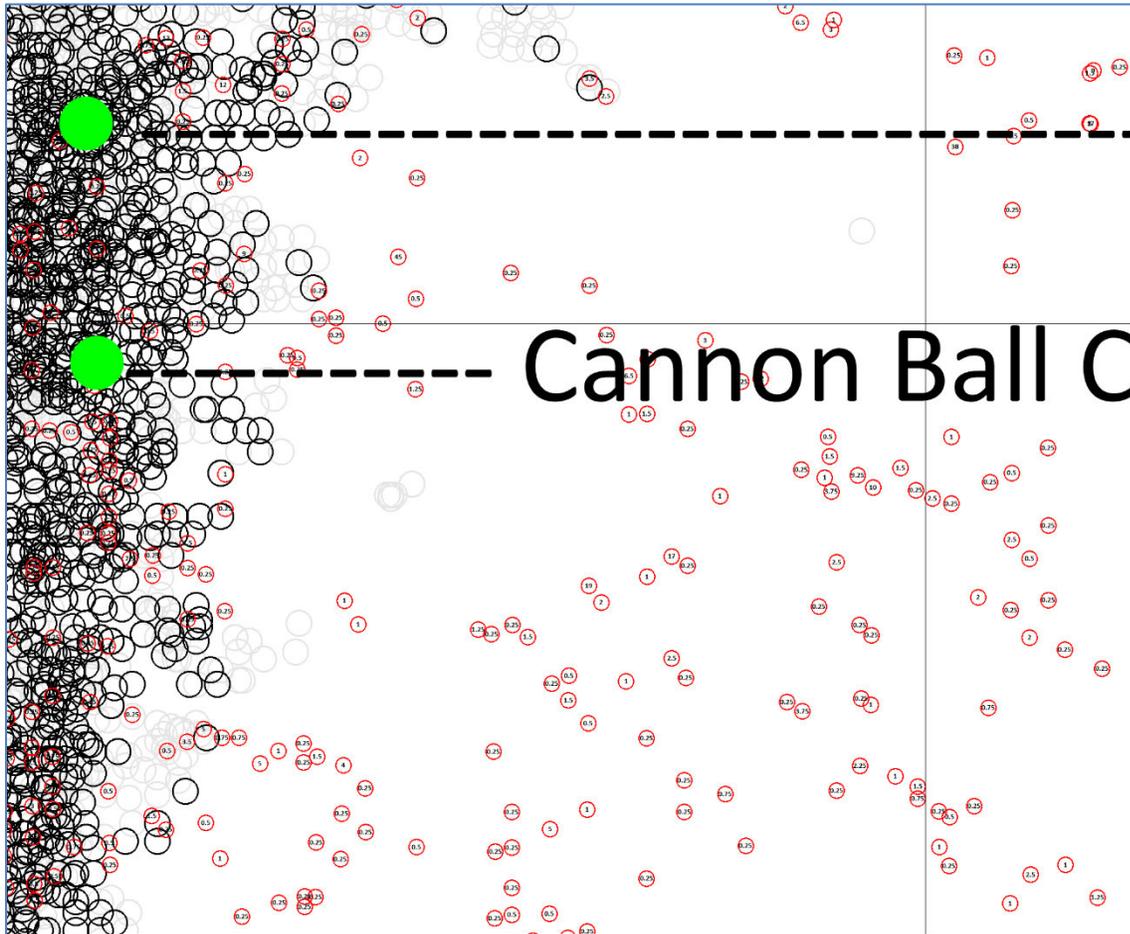


## 5.11.24 Margarita Magnetometer Targets



### 5.11.25 Margarita Magnetometer Targets – close-up sample

Zoomed image of magnetometer targets showing their signal strength within each target circle



## **5.12 PORTIONS OF THE PROJECT AREA OR IDENTIFIED SITES NOT INVESTIGATED**

The *Atocha* site is over 9 nautical miles long, most of which has been searched over the nearly 5 decades of salvage operations. As technologies develop, further investigation of areas already searched are being conducted to locate previously undetectable artifacts. The extent of the site will be systematically increased as the trail of artifacts are developed via systematic survey and identification processes that allow for fact based extensions of both admiralty claims and permits (or certifications) .

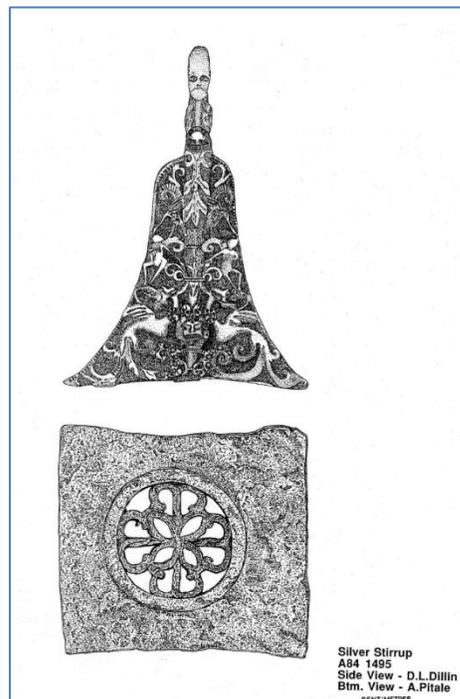
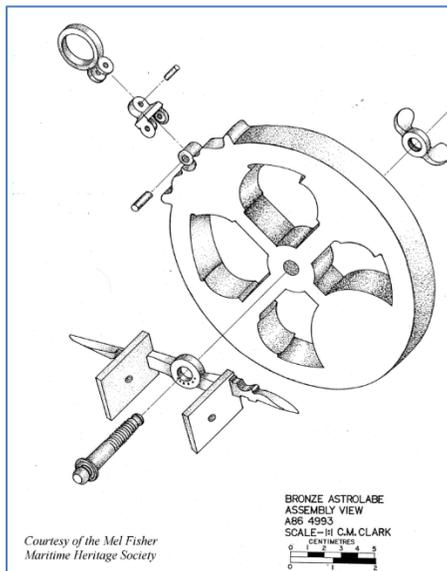
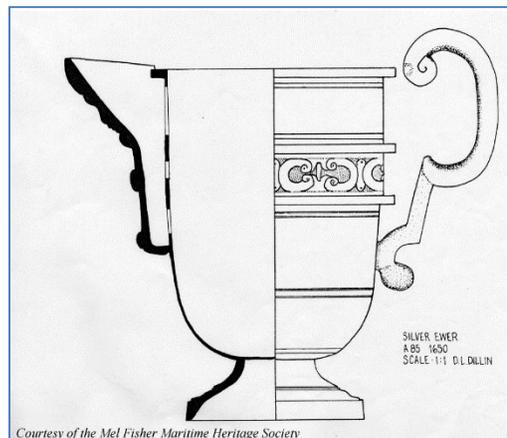
## **5.13 PHOTOGRAPHS OF EACH SITE**

As these are widely scattered underwater wreck sites, it is impossible to photograph them as you would a terrestrial site. Photographs that do exist consist mostly of those that were taken in the 1980's on the extant *Margarita* hull structure (photomosaic) and the various photographs taken on the primary cultural deposit or "PCD". Many of these are held as part of the permanent collection of the Mel Fisher Maritime Heritage Society or are the property of Motivation Inc. and represent intellectual property for which any publication needs permission.

## 5.14 ARTIFACT ILLUSTRATIONS

During the many decades of work on the *Atocha*, *Margarita* and 1715 Fleet wreck sites there have been many artifacts that have been drawn by various artist and archaeologists. Many of these illustrations have been donated to the Mel Fisher Maritime Museum's collection by Motivation, Inc., and its predecessor salvage companies. Most of these hand drawings have been made available to the public by Motivation, Inc. through our on-line research database at <https://www.melfisherartifacts.com/>

In the Main Menu, choose "Illustrations" to see the various categories available.



## 5.15 SPECIAL SURVEY TECHNIQUES & EQUIPMENT

### 5.15.1 Developing Technologies in Historic Shipwreck Search & Recovery Operations

By Gary Randolph

Mel Fisher's enters the Age of Autonomy!

For the past four years, the Mel Fisher team has been working with a number of the world's most advanced marine equipment manufacturers to bring together the highly-specialized components required to assemble the most technologically advanced historic shipwreck survey & identification vehicles ever used. We are very proud to introduce you all to "Dolores", our Hybrid Autonomous Underwater Vehicle (HAUV) named in honor and memory of Mel Fisher's wife *Dolores Fisher*.

Mel Fisher's Expeditions has been testing "Dolores" in hybrid mode (HAUV mode, attached to



*Dolores HAUV being deployed with EM system attached*

fiber optic umbilical) to conduct preliminary side scan sonar, magnetometer and electro-magnetic (EM) surveys on the *Atocha* wreck site. This will be the first submersible of its kind used in our industry. For those who are not familiar with AUV's and HAUV's, an Autonomous Underwater Vehicle (AUV) is a submersible unmanned vehicle with survey capabilities that eliminate the need for a tethered towed survey system. In the future, will have the ability to program a search grid into the HAUV and deploy it into the water where it will go and do a complete survey of that grid. It will then

return to the boat on its own using a state-of-the-art inertial navigation system. Once back on board the vessel, the survey data can be downloaded to our topside computers through a high-speed Wi-Fi network connection while the batteries recharge, and then she can be launched again to continue with another 12-16 hours of survey.

One of the main differences between "Dolores" and other AUVs available today is the ability to quickly transform from AUV mode to ROV mode (HAUV). Once "Dolores" has done its survey and targets have been acquired, she can be attached to a fiber optic tether and remotely controlled from the ship. This gives us the ability to use her as an "eyeball" ROV and to hover over targets and identify them efficiently. This will be the first HAUV used in the historic shipwreck recovery industry. For our shallow water wreck sites in the FKNMS such as the *Atocha* and *Margarita* we will be using "Dolores" in hybrid-tethered mode for testing and real-time data collection.

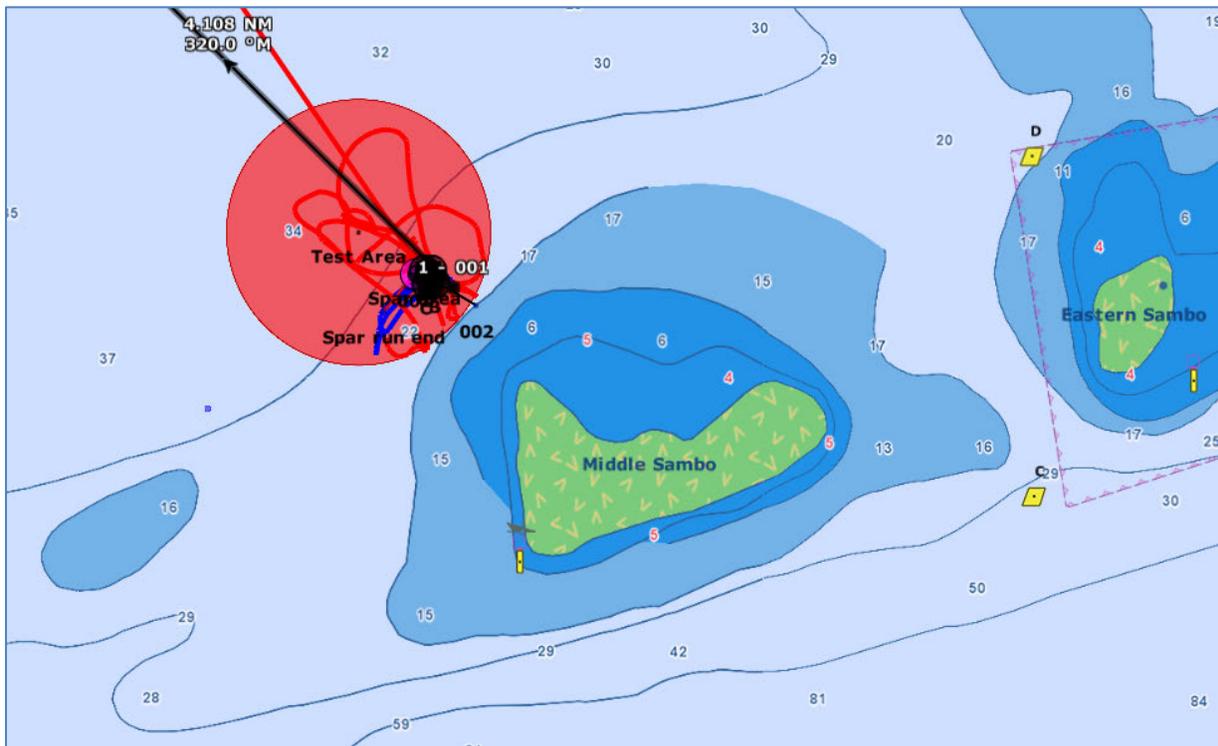
"Dolores" can search in depths up to 1000 meters (roughly 3300 feet). She has interchangeable, cutting-edge electronic survey equipment. "Dolores" can do both dual frequency side-scan sonar and



## Developing Advanced Sensors & Detection Capabilities

In 2015 our team partnered with the developers of a highly advanced EM (electromagnetic) detection system to test its capabilities with our HAUV for both unexploded ordnance detection and historic shipwreck artifact detection. This group is focused on advancing UXO detection for the US military using SBIR funding programs and have partnered with us because of our marine operational experience and that fact that “Dolores” is the most advance and stable vehicle they have been able to identify to fly their EM coil systems very close to the seabed. This combined with the fact that the targets that we are looking for have similar target profiles and our mutual overall goals for advancing EM capabilities in a marine environment are aligned, we felt that this relationship was a perfect match. Since we needed to do this testing and development work in shallow water with good visibility, we requested the FKNMS to amend our *Atocha* permit/certification to include a vehicle testing area inside the outer reef in a flat sandy area south of our vessel operations base on Stock Island, Florida. This testing area will facilitate day trips to the testing area and allow us to process our data every night when we return to shore.

This test area was approved, and our permit was amended to include the following test area highlighted in red.



Here you can see our teams laying out dummy bombs, iron chain, silver bar, copper ingot, ballast stone targets and our testing grid in a local park in preparation for underwater testing.





*Atocha silver bar and copper ingot targets being prepared for deployment in the test area*



*Practice bomb target view from control room monitor*



*Modern practice bomb targets along with an old bomb fragment found on the wreck site*



*Copper ingot captured in Dolores' downward camera as seen from control room monitor*

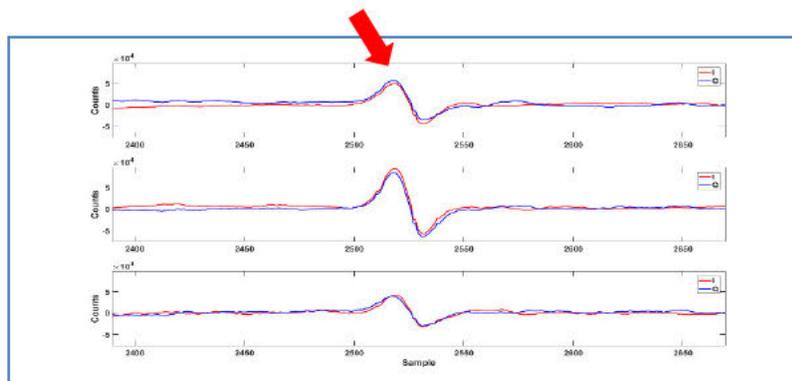
## EM Target Testing & Analysis

One of our goals in the EM system development is to be able to locate and identify all metallic objects, ferrous and non-ferrous. Here is an example of how that it done.

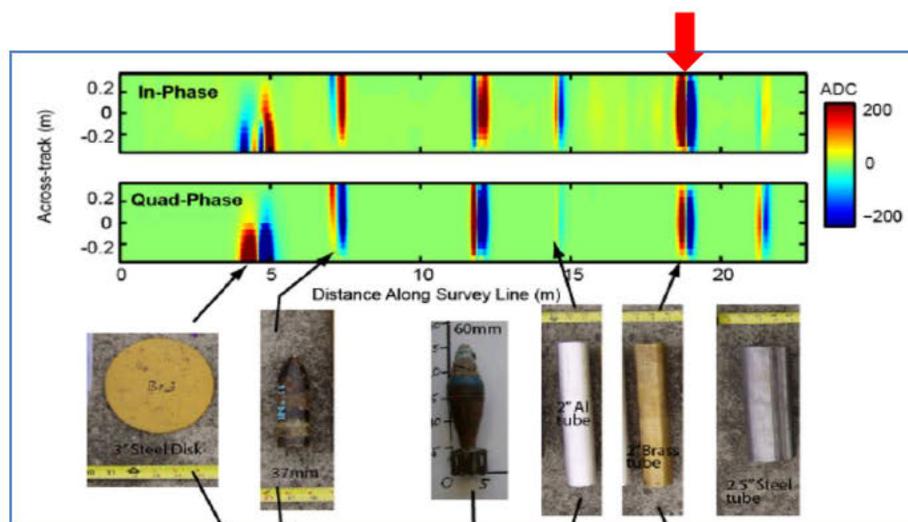
From our EM/Geophysical development partners:

*"I looked at the raw data and by comparing the "I" and "Q" values of this anomaly it appears NON-Ferrous (I and Q values are correlated). I have attached a zoom-in of the I/Q values for this anomaly in all three coils. Also attached is a slide that we've briefed in the past showing I/Q values over various non-ferrous and ferrous items. If you look at the data in this slide you can see "I" and "Q" are correlated for non-ferrous items and anti-correlated for ferrous items."*

This image shows hit #683's signature in the 3 receiver coils with the plot for the I & Q values matching up on top of one another which is a very good indicator that this target is NON-Ferrous!



This image shows the EM signature of a few ferrous and non-ferrous test targets. You can see on the aluminum and brass pipe targets that the "I" (in-phase) positive red and negative blue signals line up in the same order as the "Q" (quad-phase) signals below indicating a non-ferrous target.



## 5.15.2 HAUV and ROV-Based Underwater Electromagnetic Array Technology – Lessons Learned and Ongoing Future Development

By Gary Randolph

### Objectives

Current methods for detecting and characterizing deeply buried historic shipwreck artifacts rely heavily on trained divers for visual inspection and handheld metal detector surveys which can be a very slow and expensive process. While autonomous underwater vehicles (AUVs) provide an alternative, those currently available for marine archaeological operations require well-trained operators and do not allow for real-time awareness of the marine environment in which they operate. Also, the hydrodynamics and propulsion configurations of commercial AUVs do not allow for hovering to enable detailed inspection of targets very near to the sea



HAUV Dolores with Gen-1 EM array

floor. Our objectives over the past few years of this project have been to develop innovative technologies and the underwater vehicles required for deploying underwater electromagnetic induction (EMI) sensors from our custom-built hybrid autonomous underwater vehicle (HAUV) “Dolores.”

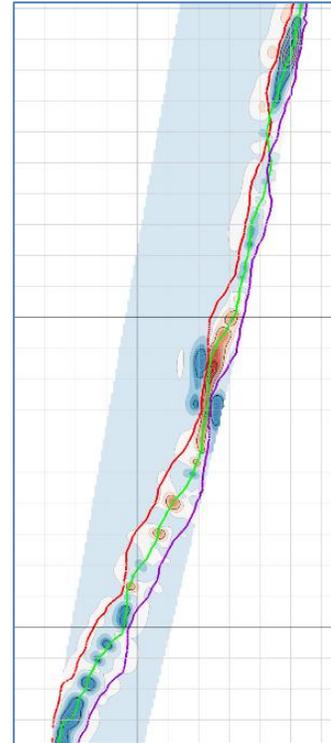


HAUV Dolores control center camera showing Gen-1 EM array being flown over the seafloor

The integration of these highly accurate sensors, USBL tracking systems, inertial navigation and control systems, and a high-resolution electromagnetic array can overcome limitations of current diver-deployed, towed, and unmanned integrated underwater detection systems. Specifically, HAUV or ROV based sensing platform enables us to perform wide area surveys with very accurate altitude control of the array as well as the ability to interrogate targets of interest and position the array-based sensors directly over these targets. This first Gen-1EM array consisted of one transmitter coil and three receiver coils. During our

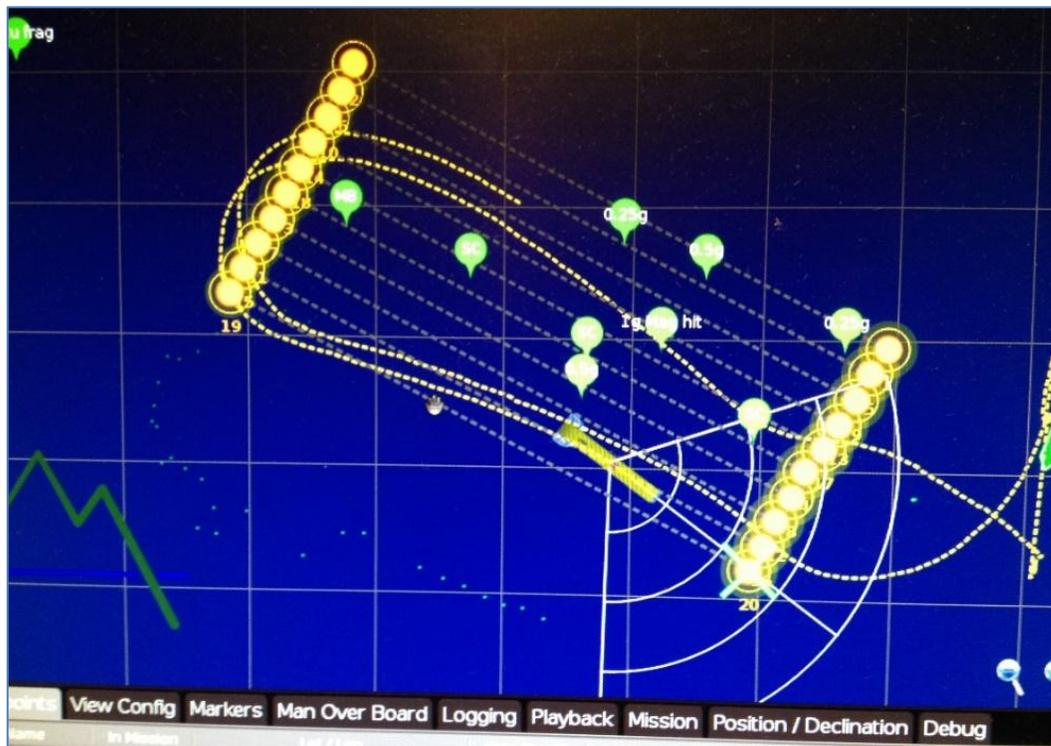
testing we tracked the position of each of the three receiver coils to develop very high-resolution target profiles.

During our 2016-2017 testing and development in the field on the *Atocha* wreck site we've identified a few challenges that needed to be addressed moving forward. The first was that *Dolores* had difficulty staying on the survey track line due to currents that pushed the vehicle off course during slow speed survey operations which can be seen in the image here. The three receiver coil track lines are shown creating an arc type track rather than a straight line. This "arc" pattern creates a challenge to achieve 100% coverage of the survey area.



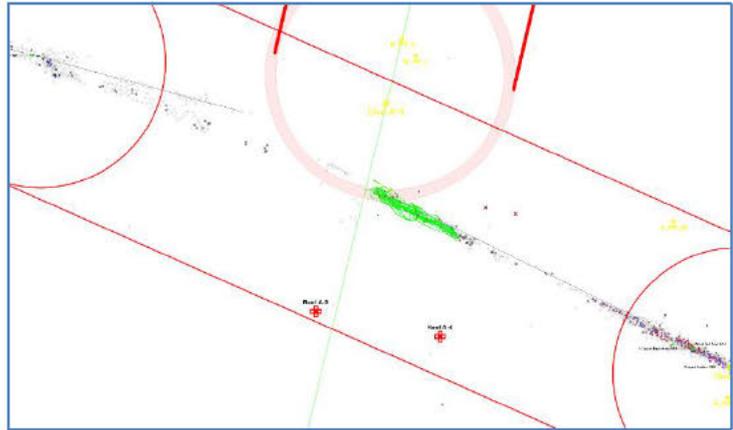
One of the other issues resulting from the strong currents is that the vehicles control system tries to compensate for the current by attempting to steer the vehicle at a sharp angle in an effort to return to the track line. This "crabbing" angle also caused the EM array to "crab" at a sharp angle which squeezes the data together also shown in the image here.

We also came to the realization that this type of survey generates a massive amount of data which needs to be processed in order to identify small, deeply buried historic shipwreck artifacts. We worked with our third-party EM partners to develop automated data processing procedures to smooth the data and begin to automatically pick targets from the dataset.



1Survey grid lines, vehicle tracks showing "arc" pattern

Most of our EM system testing work to date has been either in our near shore test area off Stock Island or on the *Atocha* trail just to the northwest of the *Main Pile* area. This area of the *Atocha* trail hasn't been worked very hard in the past. Mostly due to the artifacts being deep down in the hard-packed mud and beyond the reach of diver hand-held metal detectors even after excavation with prop-wash deflectors. In this chart, you can see some of the EM track lines plotted in green.



One of the very positive results of our work has been that we've been able to detect very small targets such as barrel hoops and even ballast stones in the deep mud. In this picture you can see one of our divers excavating an EM target with a portable airlift. The target was more than 3 feet below the seabed and turned out to be an intact barrel hoop resting at an angle in the hard mud. It took the divers a few hours to carefully excavate and recover this delicate artifact without damaging it.

The video clip is available online here: <https://www.youtube.com/watch?v=w-W-ryIDTpU>

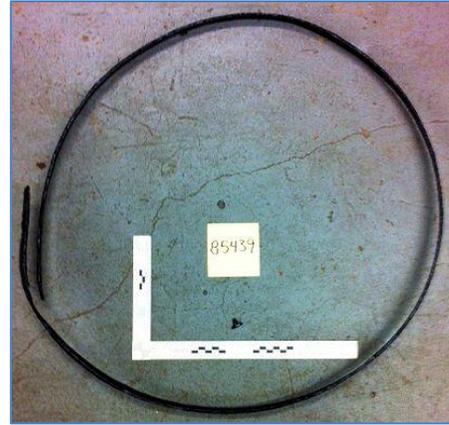


In this picture you can see the barrel hoop being uncovered by the airlift.



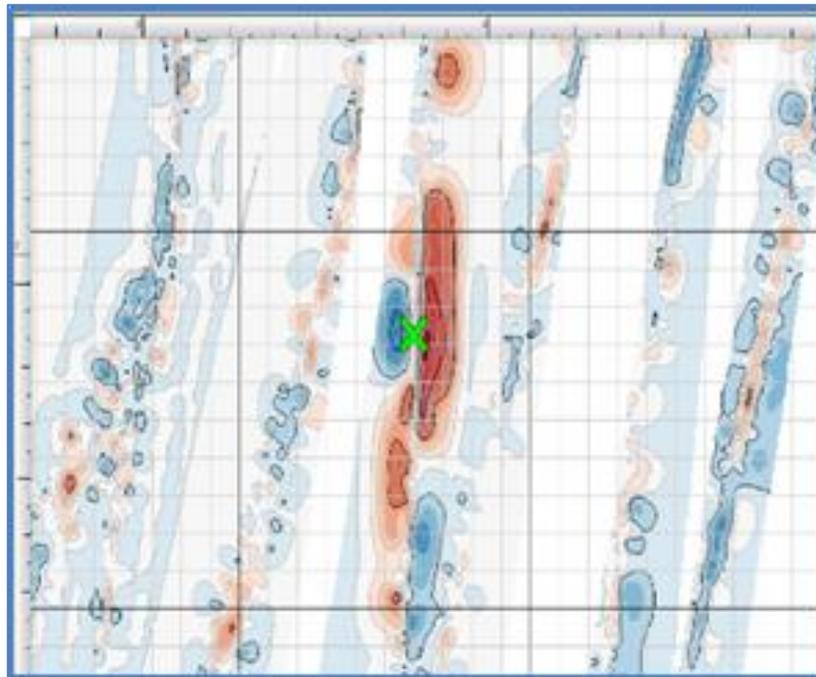


*Barrel hoop #85439 before conservation*



*Barrel hoop #85439 after conservation*

Here you can see the barrel hoop as it arrived in our conservation lab and the finished product after months of conservation work had been completed.



*EM target area with magnetic field contours, identified as a group of deeply buried Atocha ballast stones*

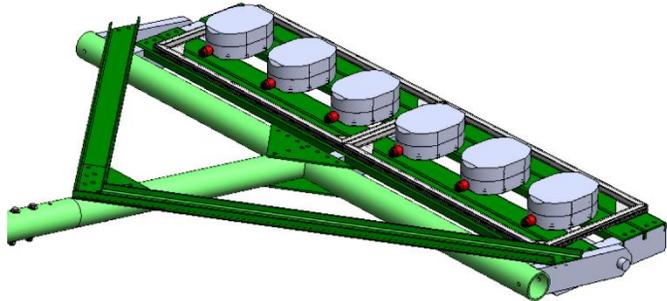
## New ROV & Gen-2 EM Flex Array Technology Development

Moving forward, we have made the decision to acquire new Sub-Atlantic Mojave ROV to fly our next generation EM array. This traditional style ROV has very strong vectored thrusters for better line following and tracking capability. We will be installing our inertial navigation system with fiber-optic gyro and USBL tracking system from *Dolores* on this new ROV during the winter of 2018-2019. We are also making provisions for adding our dual frequency Marine Sonics Technology side scan sonar and Geometrics magnetometer to this vehicle. This new ROV will plug directly into our current *Dolores* command / control center on the *Dare*.

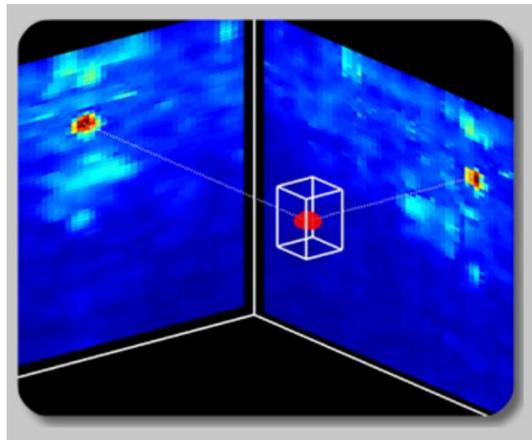


The new EM Flex Array will utilize six differential receivers, two rectangular transmit coils. We are also looking into installing a number of newly developed micro-magnetometer sensors on this array to help in the discrimination of ferrous and non-ferrous targets as well as estimating target depth. This new EM system will be mounted directly to the front of our new Mohave ROV system containing our advanced inertial navigation and control system. This ROV provides a stable operating platform for deployment of the marine EM Flex array and is capable of highly accurate positioning and close and well-controlled standoff from the sea floor.

This image is one of the designs being tested by our partners. We have done some system development, silver bar, copper ingot and iron spikes target testing in their shop during the month of October-2018. We will also define the final design for the mounting system to the new ROV platform during the coming months.



We are planning to begin testing of this new system in early 2019. The project team anticipates that this new vehicle and EM Flex array system will provide the critical capabilities of precise vehicle positioning, line following, bottom / altitude tracking, target depth estimate and high probabilities of detection for deeply buried historic shipwreck artifacts located on the *Atocha* trail.



### **January 1, 2025 status update on EM Program:**

As of the beginning of the Covid-19 pandemic in 2020, this program has been paused until such time it can be restarted. We are hopeful that we will be able to begin working on this program during the 2025 salvage season.

## 6 HISTORICAL FIELDWORK

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### 6.1 OUT OF SIGHT! SEARCH FOR THE *ATOCHA*...

In 1971 after Eugene Lyon, PhD provided Mel Fisher with a vital historic clue found in the archives in Spain the search for the *Atocha* was shifted to West of the Marquesas Keys area - well out of sight of any land. There was nowhere to erect beach markers, so positions had to be fixed in another way. At the time vessels operating out of sight of land were using a system known as LORAN-C. This was a system that used radio beacons from towers erected along coastlines. A receiver aboard vessels could pick up a number of these towers and calculate the time differentials from each tower known as "TD's." The accuracy, however, was never much greater than about 100 meters. If you were looking to get back to a specific dig site, you had to have left a buoy marking the spot and if you got within 100 meters the assumption was you could then find the buoy.



Atocha Site 1970's Theodolite Tower

A new more advanced system capable of much greater accuracy was sorely needed to conduct long range, systematic remote sensing surveys using magnetometers, side scan sonar and sub-bottom profilers. Mel erected two towers one on the East side and one on the West side of the *Atocha* search area, atop each of these towers was a platform. Daily, two men would be dropped off on the platforms. They had with them survey instruments known as theodolites, radios, water, and large straw hats. These hardy and very tanned folk became lovingly known as the "Fry Boys." From each of these towers they could keep in contact with the vessels conducting the search and using the theodolite, keep them driving on a straight line (to a degree). Buoys were still deployed on every hit and over the years over thirty thousand anomalies or magnetic targets were recorded in this manner. Early finds such as the area of the Bank of Spain, the Galleon Anchor and the 9 Bronze cannon feature were all initially recorded using this method.

In about 1980 technology was progressing and a new tracking system was brought online. This system was known as the Del Norte system. This system consisted of two microwave transmitters that broadcast microwaves from base stations and transponders aboard each vessel. The microwave broadcasting base stations were placed on the old towers and the transponders on the vessels read distance in meters from each tower with great accuracy. This in effect allowed the vessels and the "cartographer" to track

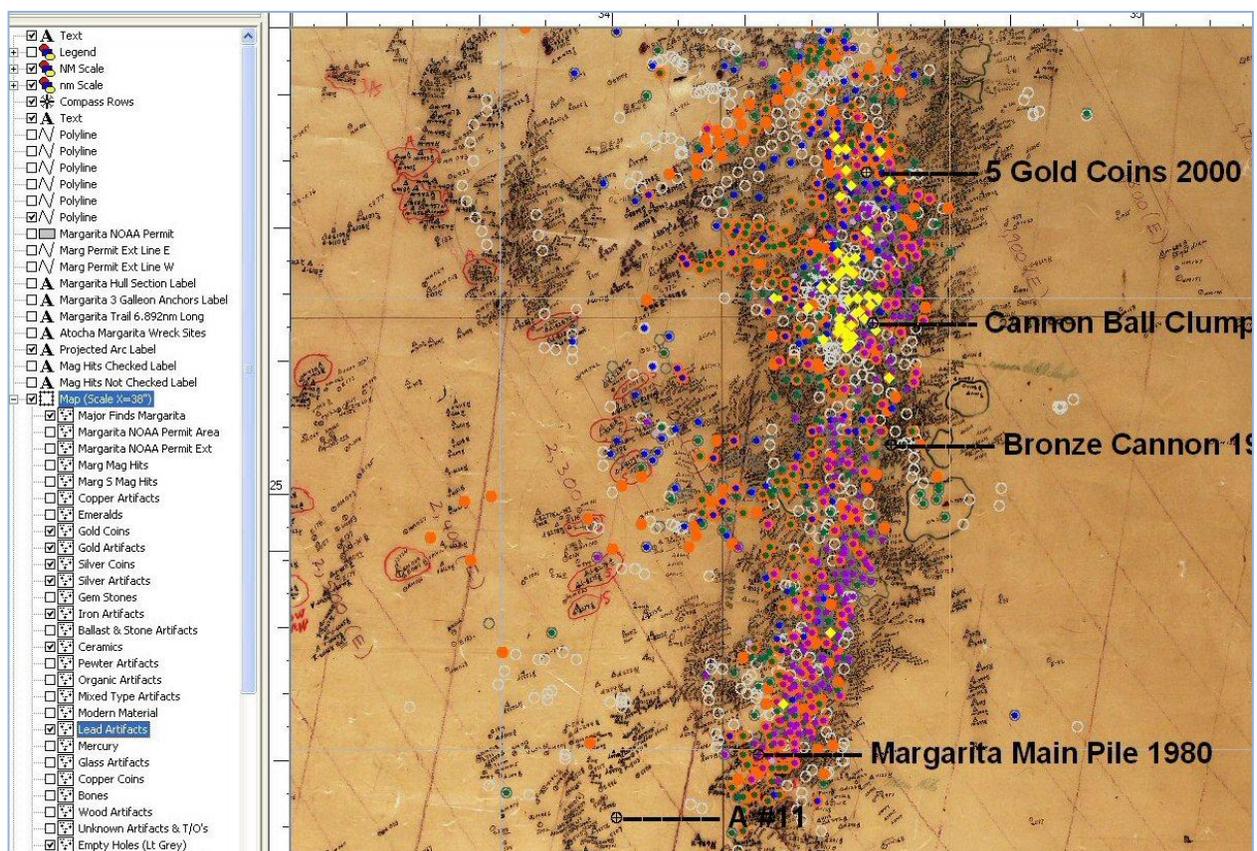


Atocha Main Pile Timbers, 1985

each dig on the now two sites being worked the *Atocha* and the newly discovered remains of the *Santa Margarita*, the sister ship to the *Atocha* and lost in the same hurricane.

The “Fry Boys” were out of a job! Utilizing the Del Norte systems, teams from Treasure Salvors Inc. would recover wonderful treasures from the site of the *Santa Margarita*. Five years after that discovery, and sixteen years after the quest for the *Atocha* began, the “Main Pile” or the “primary cultural deposit” (PCD) of the *Atocha* was found. Mapping on the PCD was accomplished in a fairly low-tech way. This technique is known as baseline offset measurements. The site has a measured baseline stretched along its long axis with each end being a “datum point” that would remain constant. As objects were recovered, they were each measured both up the baseline and then the offset measurement with compass bearing was made to the object, and they were hand plotted on in house developed paper and mylar charts. This system was simple, accurate and efficient but unfortunately not perfect. However, we recorded a massive amount of data during one of the greatest treasure finds of modern times.

The technique stayed basically the same for mapping the site for the decade of the 1980’s and into the early 90’s but things were rapidly changing with data management in general and specifically with the advent of personal computers. While we had employed computers and even an early form of digital image recording for the cataloging and curation of the finds from the PCD this produced mixed results. For those of you who are old enough, most of our data was archived on 5½ inch floppy disks! While at the time, this was “state of the art,” I can assure you that 20 years later, extracting some of that old information required contacting a computer museum and some expert help!



Meanwhile, (and for quite some time) unbeknownst to us the military was launching satellites that were to be used for mapping and tracking planes, ships and other vehicles. These satellites, once declassified, offered a new way to plot a position through satellite technology – GPS, or if you prefer the

full name “Global Positioning Satellites.” At first, if you could plot a spot within 60 feet you were considered pretty accurate. Then, towers were erected along the coast to provide a land-based signal or differential signal from which you could get to within a meter or two (approximately 6 feet), this system was known as DGPS. Now, the differential towers have been replaced with more satellites that are spread across the sky at different angles and we now use WAAS technology or Wide-Angle Augmentation System. This still offers a degree of accuracy that is often less than one meter. We now have these units being placed in cars that allow computers to give verbal directions for various addresses across the country and the world. Things have certainly changed. As the actual technology for mapping was changing the software for plotting the remote sensing surveys and artifact finds was also changing, gone were the days of the “three-armed protractor and the metal compass.” (Although if one is navigating on the world’s oceans, it is good to have these instruments and the knowledge of how to use them as a backup!). Now hardware and software were beginning to speak to each other in ways which only a few years before we could only dream of. Today with digital mapping technology we can now go into the survey data, find an interesting area, examine the recoveries from this area, choose an artifact, view the pre- and post-conservation photos, check the laboratory’s conservation methods, analyze the results (photos and graphic drawings – even 3D photos) of each find. This has created a way of looking at the sites and areas of recoveries that we did not previously have. We can turn layers of artifacts on and off over a base map, showing dispersal across the sites of various classes of artifacts, (such as silver and gold, lead musket balls or pottery). While this may seem to the uninitiated an interesting but obscure feature, let me assure you that with such capabilities we can now put forward predictive models of where more treasure is likely to be found, what areas of the ship we are likely working with and what sorts of human behavior can be assigned to each of these areas based upon the sort of artifacts being recovered. Wonderful capabilities indeed!

The current computer applications have given us two wonderful tools. These are a GIS (Geographic Information System) program capable of accomplishing some of the tasks and a “virtual archive” of all the wonderful finds from the Ships of the 1715 Fleet, and those of the *Nuestra Senora de Atocha* and the *Santa Margarita*, 1622. As most of you reading this know, much of the treasure recovered from these sites is placed back into the stream of commerce to fund ongoing research and expeditions. In essence, what we can now accomplish is a virtual collection of all recovered artifacts that can be reviewed and manipulated even if these artifacts are no longer in our possession.

## 6.2 MAPPING THE SITES

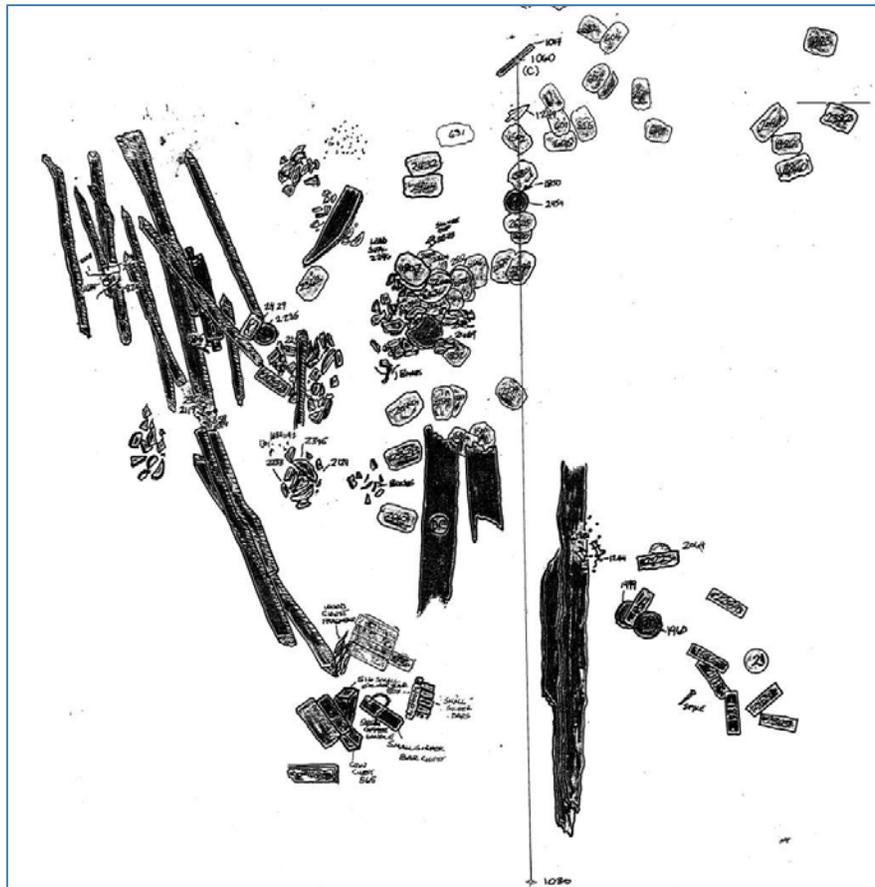
By James Sinclair

As any archaeologist can tell you maps are very important. We (archaeologists and historic shipwreck salvors) love maps on lots of different scales; large ones that show where sites are located across a “landscape” or “seascape” down to small ones of specific archaeological sites that are called “site plans.” These site plans are used by archaeologists and salvors to show where and how recovered artifacts are related to each other. On land sites there are usually many layers representing different time periods on a particular site. The trick is to excavate and to capture the three-dimensional information so that relations across the site can be seen. These associations then can be compared to other sites from similar time periods. This sort of mapping captures what is known as the “vertical stratigraphy” of sites. On highly scattered dispersed shipwreck sites we are trying to capture the stratigraphy on the horizontal plane. These sites can be miles long so “seeing context” from them can be a challenge. The hope is to begin to see where other likely areas on the site may be found and to answer larger social and cultural (anthropological) questions as well as from the salvor’s perspective of where items of intrinsic value may be.

Much of this sort of archaeological work in the past was done on prehistoric (preliterate) culture groups that left no written documentation. Of course, there are whole specialized fields of archaeology dedicated to both Egyptian studies and Classical studies

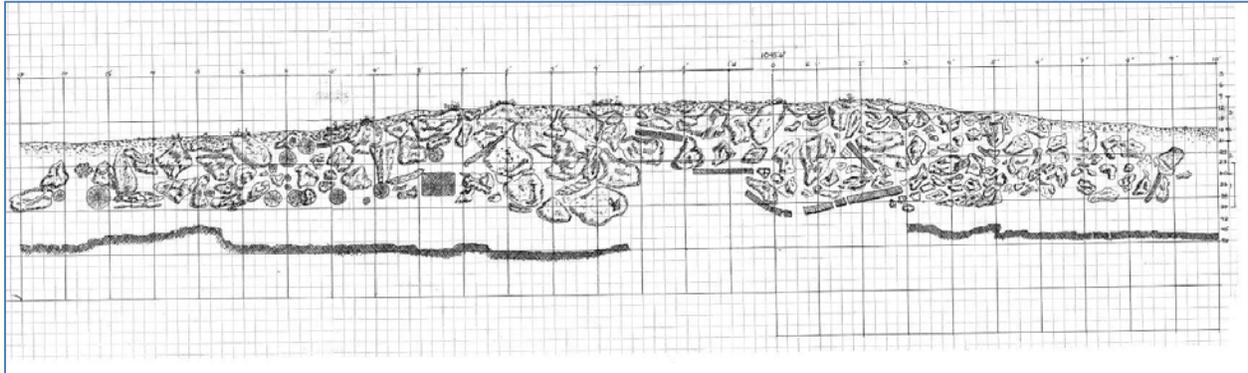
(generally thought of as Greek and Roman). In fact, there are specialists in almost every area of the world where people have lived in the past. Archaeologist until relatively recently (post WWII) were not all that interested in items or sites considered “historic.” This has certainly changed as our awareness of history and culture began to develop and evolve. Efforts to protect historic areas such as Mt. Vernon, and Colonial Williamsburg, helped to increase our awareness here in America of the importance of the historic past and helped to enact laws aimed at such protection.

It was not until the late 1960’s and 70’s that archaeologists as a larger group began to realize the importance of shipwrecks and begin to seriously work underwater. In fact, even after such work began



One Section of the Atocha Main Pile Area Charts, Syd Jones 1985

many archaeologists did not believe that in shallow water highly scattered sites, there was any meaningful archaeological information to be retrieved. This began to change with the work of Duncan Mathewson on the Nuestra Senora de *Atocha*, who first proposed that even highly scattered shipwrecks had much in the way of archaeological data if one could map out the scatter to a fine degree. Others with similar ideas, building on what Mathewson first proposed, further developed models that assist in the interpretation of these sites; however, it still comes down to mapping out where objects are found and their relation to each other.



Atocha Main Pile Area Stratigraphic Chart, Syd Jones 1985

## 6.2.1 Powder Flasks of the 1622 Fleet

### *Keeping Your Powder Dry*

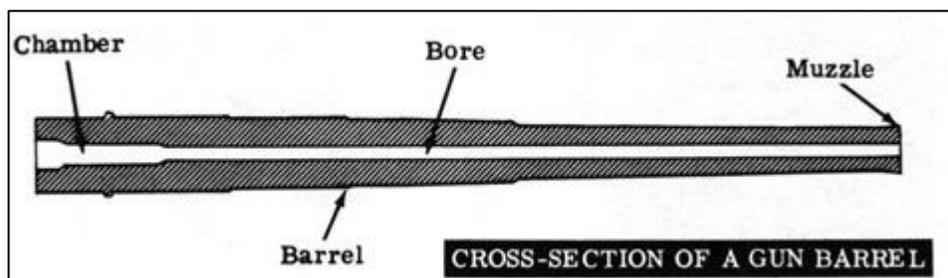
James Sinclair, MA  
MARITIME ARCHAEOLOGIST, MOTIVATION INC.

The era of the *Nuestra Senora de Atocha*, the *Santa Margrita* and the other ships in the 1622 Fleet are representative of and extensions of the extant Spanish and emerging Latin American Cultures. Ships as a mode of transport constructed by humans have been called one of the highest expressions of technology during this time.

Looking back on these times it is difficult to imagine that a sailing vessel or the tools used by their crews constituted “high tech”, but in fact they were. Along with the vessel’s equipment, the navigators, and their instruments, etc., were the soldiers and guards on board to – when necessary, defend the vessels and merchandise they carried.



During the first half of the 17th Century, all guns inclusive of cannon, long guns and pistols were constructed with the barrel being smooth bore. This is basically a simple reinforced tube of iron of varying lengths with a small opening or vent at the breach or rear end of the barrel. This small opening is where the ignition would be induced, setting of the charge in the interior of the barrel. The rapidly expanding gas from the explosion of the charge acts as the propellant to the projectile (Bullet), expelling it through the barrel and out of the muzzle. The size of the gun and the size of the charge were determinants of the effective range of the weapon.



The science of gunpowder armaments (ballistics) had not changed very significantly since they were introduced and would not change until the introduction of the “mini” ball and subsequently, rifling of the barrel.

The early development of European guns can be simplified into these basic phases:

**1364 - First recorded use of a firearm in Europe.**

**1400's - Matchlock mechanism developed, enabling "portable" firearms.**

**1500's - wheel lock mechanism is produced; however, matchlock persists.**

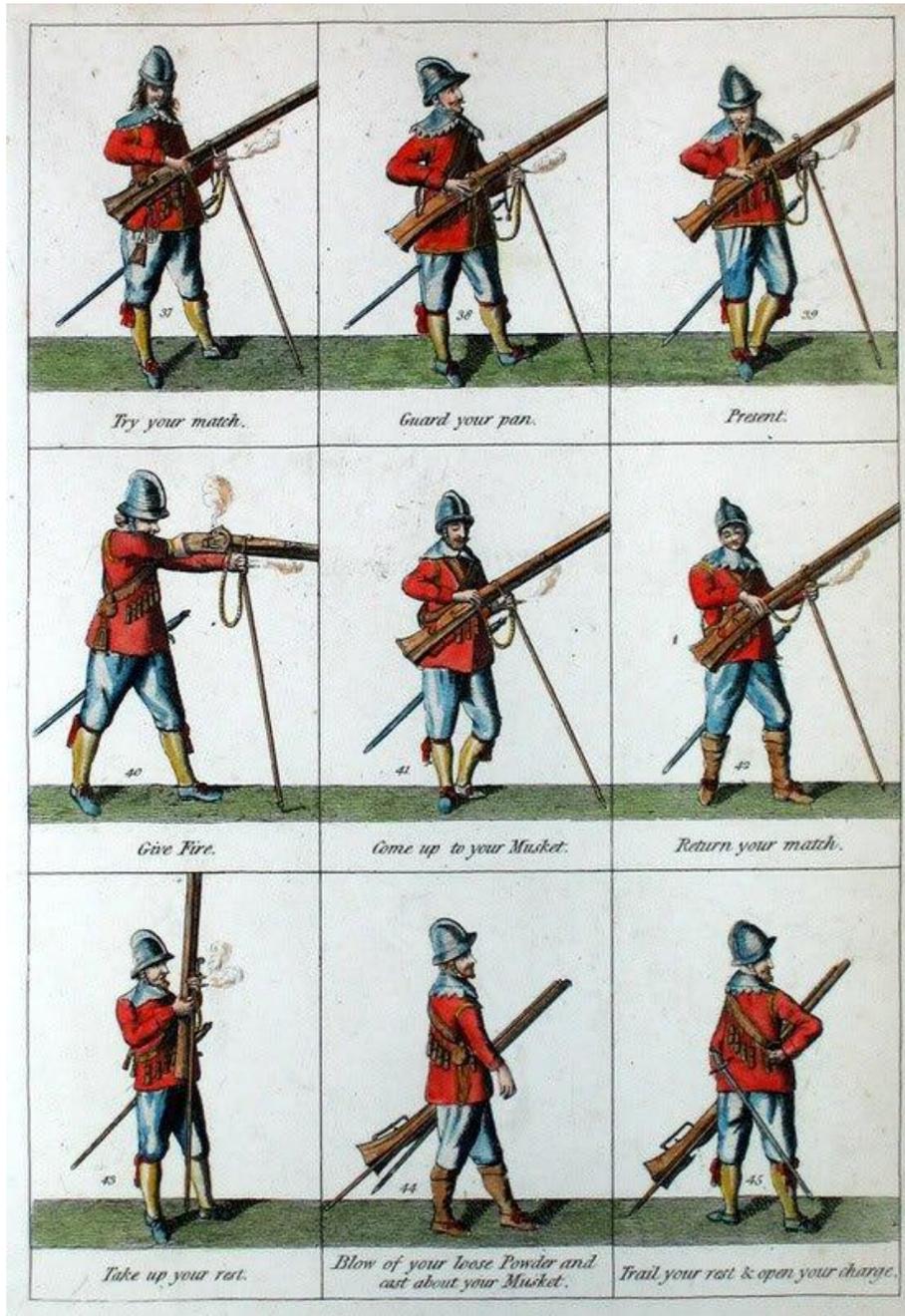
**1600's – late in the 17th century flintlock mechanisms appears.**

Before the matchlock, guns (aka hand cannon) were fired by holding a burning wick to a "touch hole" in the barrel igniting the powder inside. The matchlock technology evolved by utilizing the same sort of trigger/lock mechanism that had been used in cross bows with a few modifications. This was the first device, or "lock," for mechanically firing a portable gun. Powder is held in a "flash pan," and ignited by a wick, or match, in a movable clamp. Both hands remain on the gun, vastly improving their aim. Early matchlock guns outside those owned by royals (harquebusiers or musketeers from the lists) are extremely rare.

While there were different types of "locks" or firing mechanisms in use by the 1620's such as the wheellock and the snaphaunce, the matchlock would remain the dominant type of firing mechanism used by common soldiers (the lists) until the introduction of the flintlock after the 1630's.

#### Matchlock muskets or Harquebus aka Arquebus

Using a matchlock was a relatively complicated operation, and was certainly not conducive to any sort of rapid firing. For much of its early history it was a specialist position in an army which is why they were specifically named (as in "musketeers"). There is a manual of arms that the US National Park Service produced for the demonstration of the Matchlock at various park reenactments. The modern edition as of 2009 is some 27 pages long. <http://npshistory.com/publications/battlefield/hwp/matchlock-manual-2009.pdf>



The use of the matchlock entailed the musketeer to carry the matchlock, (normally between 12-14 pounds and 3+ feet long), the rest (a support pole), black powder of two different types, (one fine grain for the “flash pan” and the vent hole and the coarser powder for the actual charge in the barrel), a bandolier that consisted of hanging wooden tubes that contained a prepacked black powder charge, a burning match cord (that had to be kept strictly away from the black powder) and one or two a powder flasks. In the following illustrations from this late 16th century hunting scene, a musketeer can be seen with both the matchlock, as well also the two powder flasks. An illustration of which can be seen in the 1570 illustration below:



Stradanus, samtbezogene Schäfte u. Pulverfl., 1570.

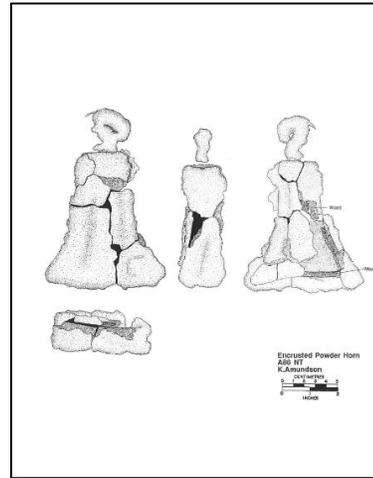
In 2023 we recovered a partial powder flask from the *Atocha* site (Tag # 94468).

This represents the 7th artifact of its type recovered that has been identified as a powder flask from the *Atocha* or *Margarita* sites.



*Atocha* Artifact #94468, 2024

Other *Atocha* Examples



## Margarita Examples



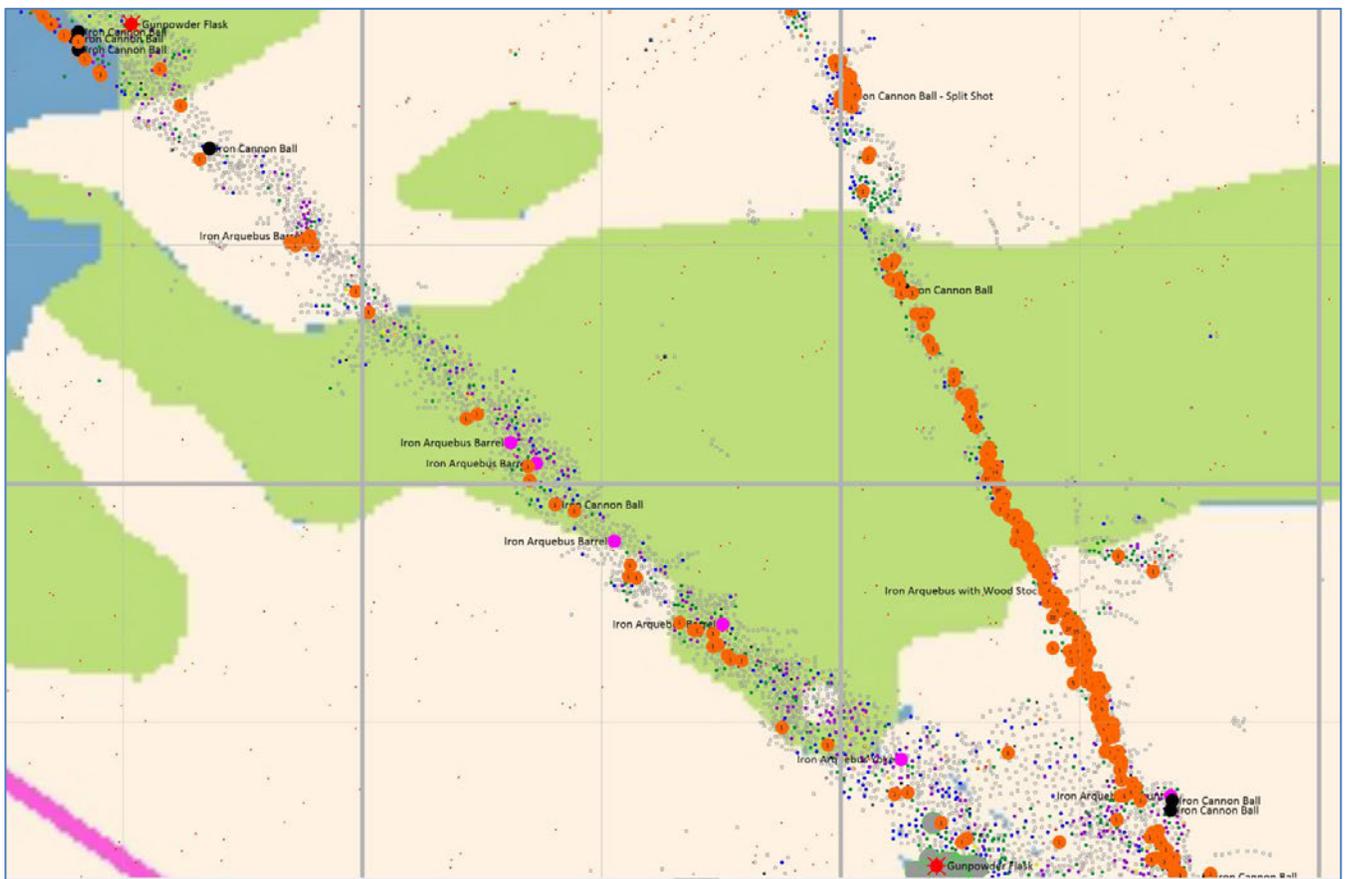
Unfortunately, all extant examples recovered were in an advanced state of decay/dissolution. Because these are multi-component objects most often made of wood, leather, and iron, it was only the iron component that allowed the calcareous deposits to accumulate and retain even a vestige of the original shape of the object itself. One powder flask seen in the illustrations was in many fragments and illustrated in that fashion.

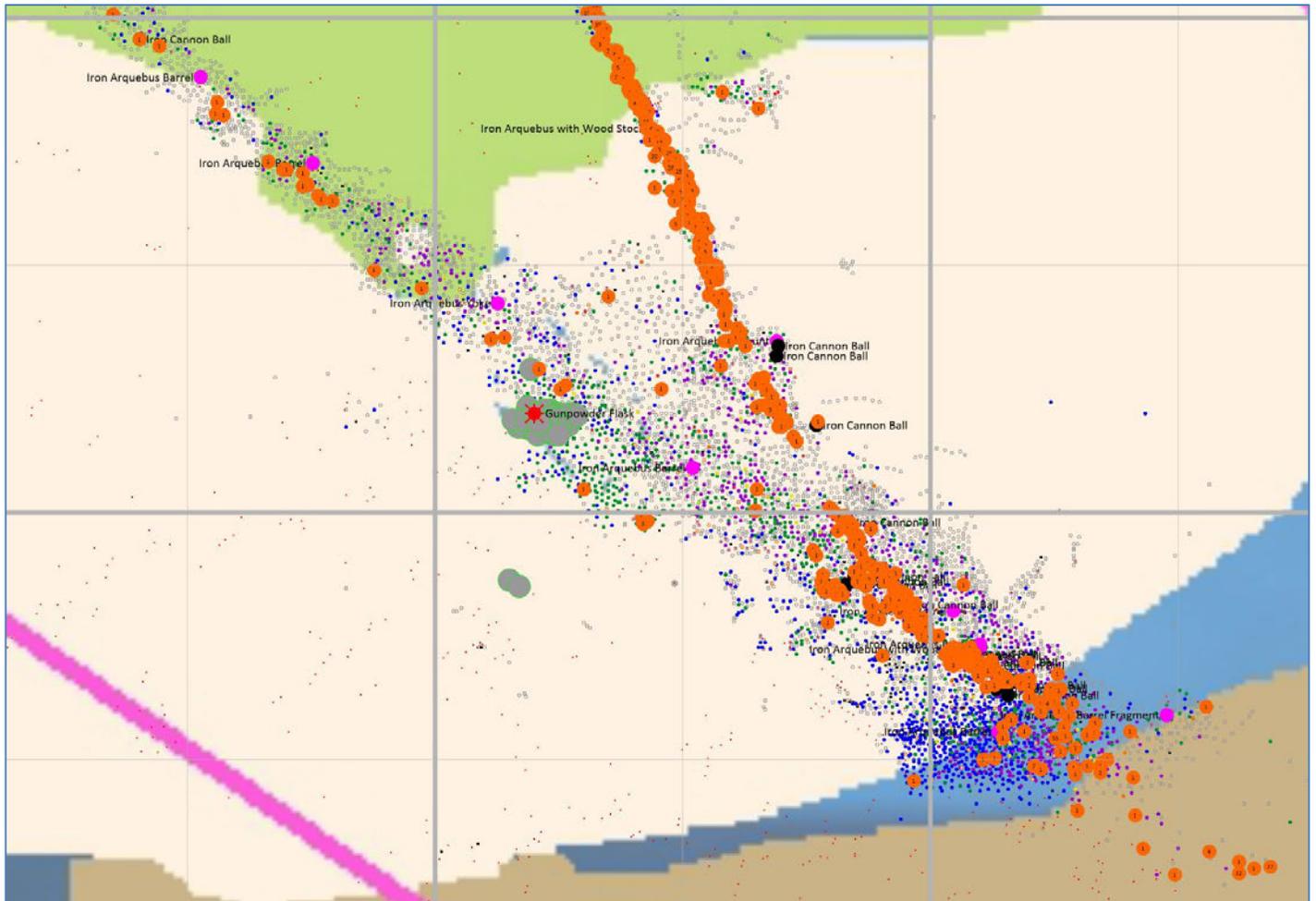
## Similar from Other collections



Image extracted from: <https://collections.hampshireculture.org.uk/object/sixteenth-century-powder-flask-mounted-steel-or-iron-around-wedge-rings-suspension> retrieved on 01/08/202







### **Incidence of Powder Flasks along the Artifact Scatter Trails in the Quicksands Area.**

One of the fascinating features of our current mapping programs is the ability to highlight or (turn on and off) different artifact types. In the preceding maps one can clearly see the incidence of musket shot seems to be highly concentrated along the more Northerly track, which we have identified as likely representative of part of the bow structure of the *Atocha*. The incidence however of cannon balls, arquebus and powder flasks seem to concentrate along the more Northwesterly track. Both tracks diverge at the southern edge of the Quicksands, an area that was called the “Bank of Spain” when it was first located in the 1970’s. This area got its name from the amount of silver coins recovered; this was also the area where the first anchor associated with the *Atocha* was located.

Looking at the maps one can see that not only were most of the powder flasks and arquebus barrels found along this Northwestern track but also cannon shot (cannon balls). The question that springs to mind is where were these objects stored aboard the *Atocha*?

No drawn ships plans have ever been found of the build and layout of a classic Galleon style vessel such as the *Atocha*. We do have such plans from later vessels and almost categorically, the place where heavy cannon shot was stored was near the keel lower hold and centrally located just abaft of the main mast. The reason for the placement of the cannon shot is straightforward, this massive weight needed to be stored so that the equilibrium or balance of the vessel would be maintained.

The fact that these sorts of artifacts are found along the Northwesterly track would indicate that the *Atocha*, during the wrecking process, split approximately amidships taking the cannon shot, some of the handheld long guns (arquebus) and their powder flasks along this Northwesterly track along with some of the personal items that have been associated with the stern area.

We will continue to utilize both our mapping methodology as well as the Galleon Matrix to illuminate more fully, the storage of various classes of materials onboard the pre-wreck *Atocha*, the wrecking process itself and the lives of those onboard.

The 2023 recovery of a powder flask is a stark reminder of both the state of ballistics was during the time of the *Atocha*, but also the fragility and ongoing deterioration of objects lost along the scatter trail of this once great treasure ship.

## 7 ARCHAEOLOGICAL & HISTORICAL RESULTS AND CONCLUSIONS

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The description of the results and conclusions of the archaeological resource investigations addresses the following:

1. Laboratory methods used to analyze artifacts and other site materials recovered during the archaeological investigations in the project areas;

During the course of the *Atocha* and *Margarita* Projects, Motivation Inc. and its predecessor companies have utilized various laboratory methods as well as specialist assessments to more fully understand the sites, the collection of materials from those sites, and the context of the materials recovered. A few of these have included Atomic Absorption Spectrometry, XFRF, as well as specialist analysis of artifacts such as those conducted by Manuel Marcial of Emeralds International, Alan Stimpson of the Mariners Astrolabes, Pricilla Mueller of the Hispanic Societies Museum of America assessed the collections of Jewelry recovered from the *Atocha* and *Margarita*, Mendel L. Peterson of the Smithsonian Institute, Specialists from the Metropolitan Museum of Art, NYC in conjunction with an exhibition there reviewed the objects recovered from the *Atocha* and *Margarita* that that had mestizo artistic elements. Silverwares were examined and assessed by specialists from Christies as well as local silver expert, Col. Alan Green. Hull structure analysis has been conducted by David Moore, MA, (*Atocha*) and William Muir, (*Margarita*). Reconstructions of the 1622 hurricane were undertaken by Cmdr. John Cryer, USN (Ret.). The Historical aspects of the *Atocha* and *Margarita* were reviewed and reported on by Dr. Eugen Lyon, and the original construction of the *Atocha* was covered by Carla Rahm Phillips in her book, *Six Galleons for the King of Spain*. (For more complete records of some of the wide varieties of studies please refer to our on-line project bibliography in our **Research Archives** available at:

<https://www.melfisher.com/MOBILE/site/Research.html>

2. The curation location of artifacts and project records;

The curation of the permanent collection of materials recovered from the *Atocha* and *Margarita* are held by the 501C3, Mel Fisher Maritime Heritage Society, who have received contributions of materials by Motivation, Inc.'s salvage operations and its investors as well as bequests of former supporters of the projects. Other museums, like that of the Delaware Technical Institute and other repositories around the nation and the world hold parts of the important collections of material recovered from the *Atocha*.

Motivation, Inc. displays its unique finds to the public during any salvage season in its 613 Duval Street retail sales area in its "Recent Find's" display cases.

The Fisher Family also has a privately-owned public museum and exhibits of their *Atocha* and *Margarita* artifacts in Sebastian, Florida.

These public exhibits and displays along with Motivation, Inc.'s public on-line Research Archives allows for the public to enjoy and interpret the wonderful artifacts as they are recovered from the *Atocha* and *Margarita* wreck sites.

3. Findings in relation to the stated objectives of the investigations;

There have been so many findings from the *Atocha* and the *Margarita* over the decades that these sites have been worked, it is often hard to grasp the enormity of both the project, the amount and level of effort expended, as well as the richness and scope of the collections and the concomitant studies that have been undertaken. Of necessity, it must be understood that the primary focus of our “Stated Objectives” of the project were, are and will remain the orders of the Federal Admiralty Courts which govern our activities and to whom we are ultimately answerable to. All the various studies, resultant reports, books, and other documentations have been done as adjuncts to the primary court order, or primary objective of the investigative efforts. (Please see extensive bibliography and timeline of the project for further detail). While not specifically required by the Federal Court Order, the efforts, and results of the decades long work of Motivation and its predecessor companies have resulted in a substantial and substantive body of work. It is obvious the Fisher family operations have passion, dedication, and a thirst to continue diligently to make their best efforts to pursue and preserve the history and artifacts associated with these sites.

4. An assessment of the site’s integrity;

As stated in previous reports submitted to the FKNMS, the Federal Admiralty Courts as well as popular books, articles, and documentaries. The *Atocha* and *Margarita* site are represented by highly scattered and dispersed ships wreckage. While much material was recovered in around what was referred to as “primary cultural deposits” (PCD’s) or Main Pile areas neither of these areas taken in and of itself is representative of the variety and richness of the collection of materials found throughout the years on the dispersed tracks of wreckage. It goes without saying that there has been enormous loss of material through the years. This is both a natural occurrence due to the initial wrecking process, the extremes of the depositional environment over the course of centuries (in-situ deterioration, biological, chemical, and electrochemical processes) as well as anthropogenic causes, (salvage on the *Margarita* wreckage contemporaneously or shortly after their loss). While site integrity is poor for either site, and modern intrusions often occur, both sites and recoveries therefrom represent homogenous collections of Spanish Colonial artifacts that are representative of social structure, cultural norms, and technology of the time. These privately funded sites are unique and unmatched in their scope by any other project of this type and era.

5. Methods used to apply National Register criteria for a determination of eligibility and historic context as contained in 36 C.F.R. 60 (“National Register of Historic Places”), herein incorporated by reference;

Since title to both the *Atocha* and the *Margarita* were awarded to Motivation Inc. and/or its predecessor companies Motivation and its legal team believe this question is not applicable.

6. Discussion of completeness of project efforts and the need for any additional identification, evaluation, or documentation efforts;

While many conclusions and analysis have been extracted on numerous aspects of these sites, under the Federal Court Orders neither site is complete in the sense that is being asked here. A wealth of data, reports based on that data, books, articles, studies, thesis, dissertations, documentaries, etc., have

at their base, work on these two iconic shipwrecks. (Please refer to bibliography at [https://www.melfisher.com/Research\\_Archives/Atocha-Margarita-Bibliography.pdf](https://www.melfisher.com/Research_Archives/Atocha-Margarita-Bibliography.pdf)) However, much work and investigation is still ongoing and being undertaken on these sites, based on current efforts. The use of GIS programs, the use of new remote sensing technology, autonomous underwater vehicle usage and remotely operated vehicle usage on these shallow water sites is both new and exciting moves into new technologies that promise to reveal more about these very important and historically rich shipwrecks not to mention using all our research and technology to solve the mystery of the location of the missing portions of these ships and their cargo.

7. Bibliography of those sources utilized.

Please see attached bibliography and online at;

[https://www.melfisher.com/Research\\_Archives/Atocha-Margarita-Bibliography.pdf](https://www.melfisher.com/Research_Archives/Atocha-Margarita-Bibliography.pdf)

## 7.1 ARCHAEOLOGICAL RESEARCH QUESTIONS

By James Sinclair

We set out several archaeological questions that we hoped to at least partially answer in the intervening three years. While we have met with some success it must be stated that these questions are aimed at answering anthropological questions and are by their nature evolutionary. This means that as more evidence is collected some of these questions may be answered more fully or that the answers may change. Or that due to the in-situ deterioration process, some aspects of these questions may never be answered. However, we feel that we can make at least partial answers to some of our posed questions. There were four questions that we posed, the first and third questions we have found can be rolled into one answer which follows.

There is also the question of how one interprets a shipwreck. One of the acknowledged pioneers in this field of underwater archaeology was the late Keith Muckleroy for him there were three main aspects of a ship (or shipwreck) to consider: 1) as a machine, designed for transportation; 2) as an element within a system, whether that be military, economic, etc.; 3) as a closed community with its own purposes, needs, and mores. Jonathan Adams built upon Muckleroy's viewpoints by emphasizing the idea of a ship as an extension of the needs and aspirations of a society (2001). In his view, there are seven cross-linked meta-perspectives from which ships and shipwrecks can be interpreted: Ideology (a symbolic expression of social ideas); Technology (means available for constructing the vessel); Tradition (system of ideas of what a vessel is); Economics (the labor and wealth required to produce a vessel); Purpose (intended function as it relates to needs), Materials (the natural or manufactured resources available for construction); and Environment (the intended operating situation for the vessel, i.e. the types of waters it will sail). While Adams' views were developed specifically for the hull remains that are encountered at shipwreck sites, many of the concepts he outlines are relevant to other materials found on shipwreck sites.

However, and this should be clear to anyone with a familiarity of research designs that they all have an inherent bias, that is; the cultural origin of the investigator(s) as well as the specific aim of the research. While the Atocha and Margarita projects are conducted as an attempt to fulfill the orders of the Federal Court orders, they have certainly provided a wide range of possibilities for research that has been undertaken in the past and that which may take place in the future. For this researcher, I agree wholeheartedly with Keith Muckleroy:

"Above all, it should be noted that the primary object of study is man [sic] ... and not the ships, cargoes, fittings, or instruments with which the researcher is immediately confronted. Archaeology is not the study of objects simply for themselves, but rather for the insight they give into people who made or used them ... maritime archaeology is concerned with all aspects of maritime culture; not just technical matters, but also social, economic, political, religious and a host of other aspects". (Muckleroy, 1978: 4)

Motivation will continue to investigate and recover these important historic resources not for just the "treasures" they carry but what these objects impart as far as knowledge of past lifeways.

As was stated in our previous permit/certification requests we are continuing to look at the wrecking and site formation processes, and the resultant collections keeping in mind the various natural biases (gender) of the assemblage as well as the filtering effects of the wrecking and site formation processes on the artifact scatter. We also utilize what R. Duncan Mathewson, III has termed the "Galleon Matrix". In fact, what this matrix attempts to do is assign activity areas to parts of a Spanish Galleon. These activity areas would in turn be indicative of specific human behaviors. The "Matrix" concept acts as a

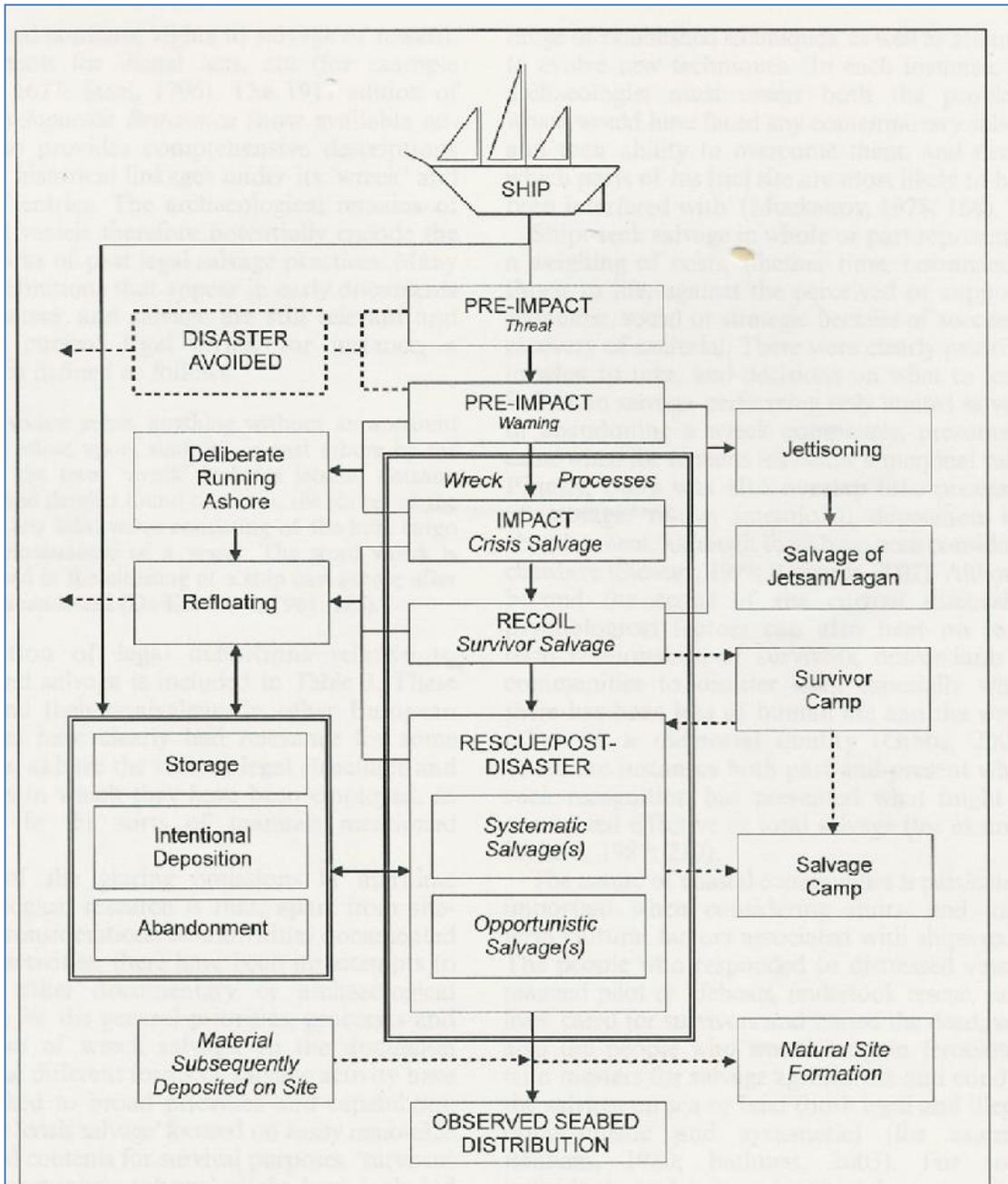
springboard or lens from which the scattered remains of the *Atocha* can be viewed and interpreted and middle range anthropological theories can be approached.

**Middle range theory** was described very well by Lewis Binford in the 1970's as follows:

*"Middle range theory building provides an accurate means of identification, and good instruments for measuring specified properties of past cultural systems. We are seeking reliable cognitive devices; we are looking for "Rosetta stones" that permit the accurate conversion from observation on statics to statements about dynamics. We are seeking to build a paradigmatic frame of reference for giving meaning to selected characteristics of the archaeological record through a theoretically grounded body of research, rather than accepting folk knowledge – let alone implicit folk knowledge – as the basis for describing the past". (Binford, 1977, Pp. 1-10)*

The hope then is that by utilizing our GIS program (the means and the instruments that Binford mentions) for detailed location and artifact information, and filtering this through the lens of the "Galleon Matrix" as described by Mathewson, the static remains (artifacts) that we observe on the seabed and analyze in the laboratory can then become a way of observing past cultural behaviors and social dynamics.

First a review of the dynamic sorts of human behaviors one might expect from a shipwreck context the following is from Gibbs, 2006: (IJNA, 2006) put forward a schema that incorporates more and varied human behaviors that affect the assemblage of materials observable on the seabed. These are the sorts of anthropogenic behaviors that one might expect from those aboard a vessel prior to during and after a wrecking event. As previously stated, we have some very strong evidence that support Gibb's positions, this is especially true on the Santa Margarita and is upheld in the archival documents recovered by Eugene Lyon PhD.



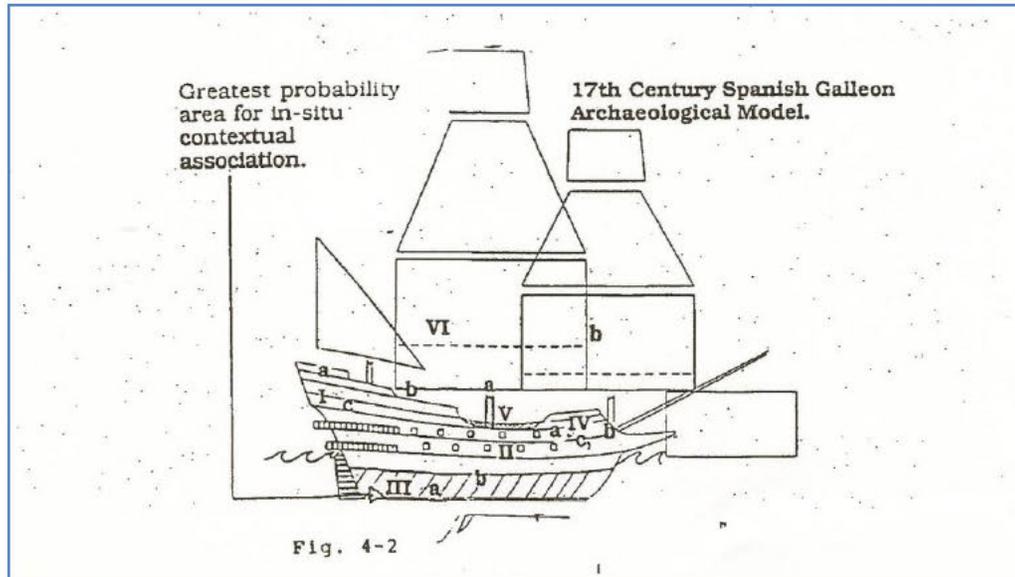
This modified flow chart is a good beginning at ways to investigate the human behaviors both before and after the wrecking event that could affect the various extracting filters/mechanisms as well as the mixing or scrambling devices described in Muckelroy's earlier work.

Table 2. Responses during shipwreck crisis (after Leach, 1994)

Stages	Examples of strategies, options and actions	Examples of physical and archaeological signatures/consequences
<b>Pre-impact Threat phase</b>	<p><b>Long-term</b> Collection of information on potential threats. Decisions to take/avoid routes, develop sailing instructions and seasonal restrictions Design or modification of vessels and equipment suitable to overcome potential threat Selection or training of crew</p> <p><b>Short-term</b> Changes to course, increased awareness for lookouts, preparation or stowage of equipment</p>	<p><b>Pre-depositional.</b> If strategies to avoid impact are successful, this may result in there being no archaeological evidence. Where archaeological remains do exist, these may exhibit evidence of Pre-impact strategies to diminish or negate risk.</p>
<b>Pre-impact Warning phase</b>	<p>Radical changes to course or attempts to slow, stop or turn, including dropping anchor. Jettisoning of some items. Running ashore to avoid catastrophic impact. Pre-impact abandonment possible but unlikely. Possible intervention by external sources.</p>	<p><b>Pre-depositional.</b> Effective Pre-impact behaviours may result in no arch evidence, or a debris trail of jettisoned items, but no wreck. Disposition of wreck and presence/absence of materials may be indicative of pre-impact awareness, preparedness and response.</p>
<b>Impact</b>	<p>Strategies and actions dependent upon the nature of Impact (catastrophic v. low-intensity). <b>Decision to remain aboard</b> Club-hauling (use of anchors) to pull off, or driving over obstacle. Jettisoning heavy items or cutting away masts in order to re-float or save the structure. Patching leaks until repairs can be made. <b>Decision to abandon a vessel</b> Lowering of the ship's boats or lifeboats, securing a line to shore, removal of people. Rapid selection and removal of primarily survival-oriented materials ('Crisis Salvage'). Initial post-disaster survivor landing site.</p>	<p><b>Depositional</b> If Impact is negated, the vessel may be recovered, resulting in no archaeological remains or jettisoned materials only. If unsuccessful, site may include ship's structure, cargo and human fatalities.' Crisis Salvage'—absence of primarily survival-oriented materials, including boats from the wreck-site, or evidence of the same at land sites (easily accessible contents and cargo, fixtures and fittings). Discard of human remains resulting from post-impact mortality.</p>
<b>Recoil</b>	<p>Establishment of survivor camp Establishment of authority structure and possible re-organization of population. Organization of subsistence and rescue strategy. Further selection and removal of materials ('Survivor Salvage'), assuming that a return to the vessel is possible. Limited by available labour and equipment. Repair and re-floating.</p>	<p><b>Post-depositional</b> Establishment of survivor camp. Site structure reflecting survival strategies. 'Survivor Salvage' (cargo, fixtures, minor structural) materials absent from wreck site or located within land site. Adaptation of materials and foraging behaviour. Evidence of human fatalities may indicate unsuccessful strategies. Possible removal of vessel.</p>
<b>Rescue and Post-Disaster</b>	<p>Complete abandonment of wreck and contents. Salvage depends upon accessibility of sites and benefits versus cost, effort and time required. <b>Opportunistic salvage:</b> short duration and intensity, resulting in focus on particular types of material. Legal rights to salvage unlikely. <b>Systematic salvage:</b> over an extended period with access to increased equipment and labour, including recovery of all or part of the cargo, fixtures/fittings, minor and major structure, or complete recovery. Legal owner or agents of the wreck and materials.</p>	<p><b>Post-depositional</b> Establishment of salvage camp for storage of salvaged materials and habitation of salvage crew. Evidence of removal or non-removal of materials from wreck and land sites. Removal of vessel. Removal of cargo and fittings, through to 'Breaking' and removal of minor and major structural elements, leaving only residual elements.</p>

## 7.1.1 Galleon Matrix v1

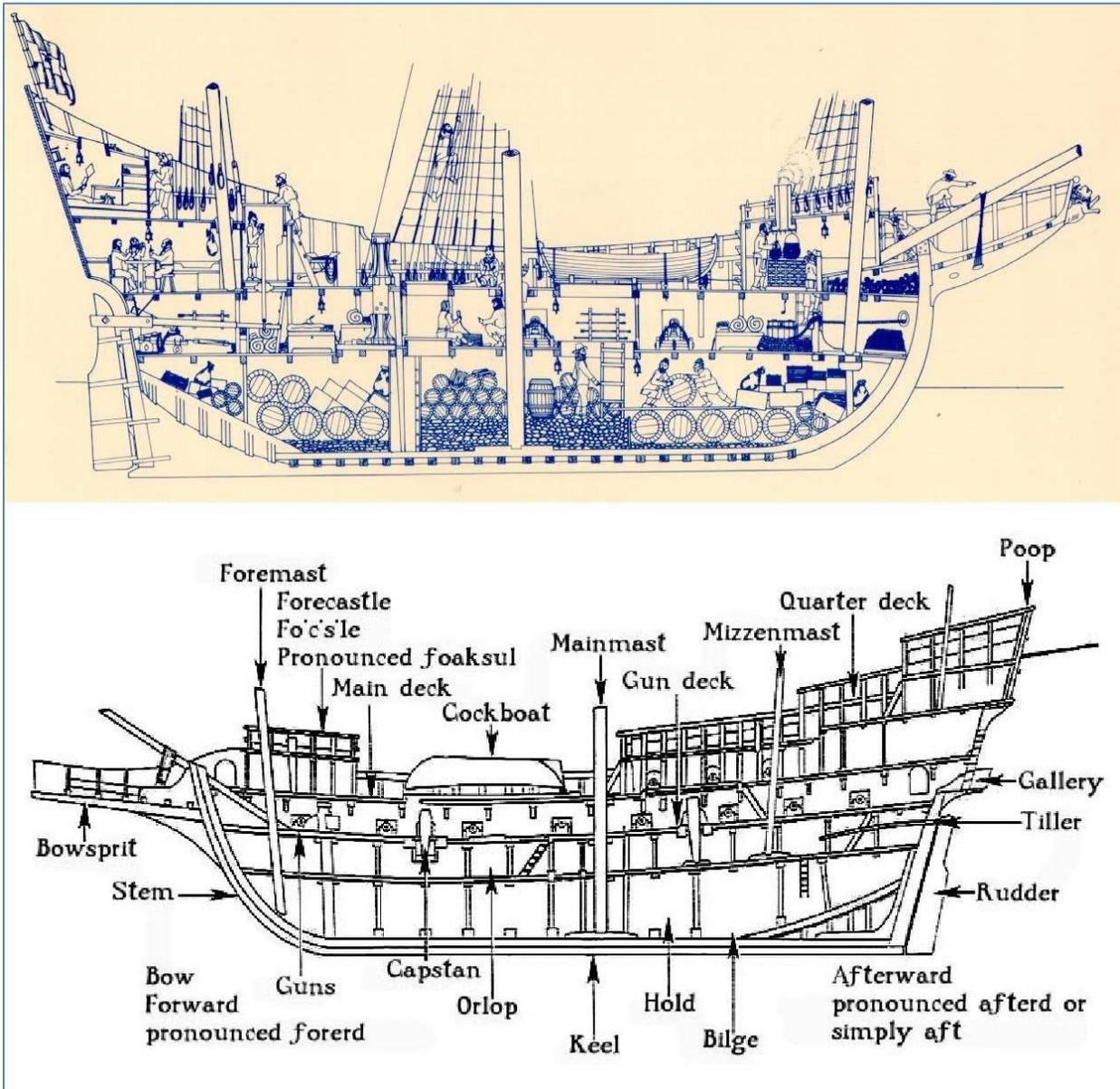
A seventeenth century Spanish Galleon mosaic model was proposed by Mathewson that had six different activity areas. Each area had associated activities and hence human behaviors varied in each different area.



<u>Activity Area</u>	<u>Matrix Artifact Assemblage</u>	<u>Behavior Patterns</u>
I. <b>Stern Castle</b> A. Poop Deck B. Quarter Deck C. Ships Officers & Passengers Quarters	Swivel guns; Laterns Swivel guns; Whip staff & tiller, Ship's bell Navigational Instruments; Personal possessions; Jewelry; Gold coins; Contraband; Rapiers; Daggers; Eating utensils; Majolica Porcelain; Religious objects; Gold bullion.	Upper class life styles; Smuggling; Nautical Science; Personal adornment fashions; Anti-boarding defense; Aristocratic value system; Religious beliefs.
II. <b>Lower Decks</b>	Cannon; Gun carriages; Artillery accoutrements; Side arm weaponry; Crew possessions.	Science and technology of ship board artillery and small arm weaponry; Lower class life-styles.
III. <b>Cargo Hull</b> A. Bilge  B. Orlop Deck	Lower hull timbers; Dunnage; Drift pins; Bilge pump; Nails; Spikes; Lead sheathing; musket balls; cannon shot; rock ballast; Grapel ballast; Barrel hoops; Ship refuse; Silver coins; Rudder straps; Cargo items; Pintles & Gudgeons; Silver ingots; Copper ingots; gold bullion. Storage pottery; ship's supplies; Sheet; Anchor; Religious objects.	Ship design and construction, ship board armaments; Cargo storage; Rock ballast composition and placement; Merchantile trade; Food and water storage; Ships supplies; Nautical science; Crafting skills; Metal working; Numismatic trade.
IV. <b>Fore Castle</b> A. Galley  B. Beak Head C. Crew's Quarters	Fire brick; Cook stove; Galley metal wares; Pottery; Glass. Bower anchors & cable; Figure head. Contraband; Knives; Bosun supplies; Religious items.	Food preparation; Ground tackle; Ship's supplies; Smuggling; Lower class life-styles; Religious beliefs.
V. <b>Weather Deck</b>	Long boat; Grapel anchors; Stream anchors, Cargo items; Scuppers.	Ground tackle; Deck cargo; Ship design and construction.
VI. <b>Sail Rigging</b> A. Standing Rigging  B. Running Rigging	Masts; Dead eyes; Blocks; Sheaves; Line; Chain Plates. Yards; Dead eyes; Blocks; Sheaves; Line; Sail Cloth.	Ship design and construction; Nautical Science.

(Mathewson, 2001)

7.1.2 Galleon Matrix: v2



Activity Area	Matrix Artifact Assemblage	Behavior Patterns
<b>Stern Castle</b>		
<b>Poop Deck</b>	Swivel Guns, Lanterns	Upper class life styles, Smuggling, Nautical Science, personal adornment, Fashions, Antiboarding defense, Aristocratic value system, Religious beliefs. Personal weapons Sword/Dagger. Grooming tools,
<b>Quarter Deck</b>	Swivel guns, Whip saff & Tiller,	
<b>Officer &amp; Passengers Quarters</b>	Navigational Instruments, Personal Possessions, Jewery, Gold bullion, Gold Coins, Contraband, Rapiers, Daggers, Eating Utensils, Majolica porcelain, religious Objects	
<b>Lower Decks</b>		
<b>Lower Decks</b>	Cannon, Gun varriages, Artillery accoutrements, Side Arm Weaponry, Crew possessions	Science and technology of ship board artillery and small arms weaponry, Lower class life styles.
<b>Cargo Hull</b>		
<b>Bilge</b>	Lower hull timbers, dunnage, Drift pins, Bilge pump Nails, Spikes, lead Sheathing, Musket Ball, Cannon Shot, Rock Ballast, Granel Ballast, Silver coins rudder Strap, Barrel hoops, ships refuse, Cargo items, Pintles & Gudgens, Silver Ingots copper ingots, gold bullion storage Pottery, ship's supplies sheet anchor religious objects.	Ships design and construction, shipboard armaments, Cargo storages, Rock Ballast composition and Placement, Merchantile trade, food and water storage, Ship's Supplies Nutical
<b>Orlop deck</b>	Storge pottery, Ships supplies, Sheet Anchor Religious obects. Ships cables	science, crafting skills, Metal working, Numismatic trade.
<b>Fore castle</b>		
<b>Gally</b>	Fire Brick, Cook Stove, Galley metal	Food preperation, Ground Tackle, Ship's supplies, Smuggling, Lower class lifestyles Religious beliefs
<b>Beak Head</b>	Bower anchors, Cable, Figure Head,	
<b>Crews Quarters</b>	Contraband, Knives, Bosum supplies Religious items,	
<b>Weather Deck</b>		
<b>Weather Deck</b>	Long Boat, graple Anchors, Stream	Ground Tackle, Deck cargo, Ships design and construction.
<b>Sail Rigging</b>		
<b>Standing Rigging</b>	Mast, dead Eyes, Blocks, Sheaves, line	Ship design, and construction Science.
<b>Running Rigging</b>	Yards, Dead eyes, Blocks, Sheaves, Line,	

### 7.1.3 Questions # 1 and #3

The first question we posed in our previous permit/certification renewal request goes to the heart of our attempts to posit human behaviors from the static collection of artifacts found on the seabed and their various associations. Utilization of the GIS system which is inclusive of all our mapping protocols as well as the artifact data base is integral to this effort.

#### Question #1

***“Using the current GIS Program and associated technologies and the “Galleon Matrix” can we assign activity areas aboard the Nuestra Senora de Atocha and Santa Margarita and relate them to the scattered trail of artifacts? If so, can we assign human behaviors to areas along the scatter which relate to pre-wreck ship area and human behaviors on board the vessel?”***

And related to this is:

#### Question #3

***“Do the archival documents, GIS and Artifact database developed from the Atocha allow us to make assumptions on any human behaviors associated with the wrecking process and subsequent site formation processes on the extant site?”***

How does one begin to approach these questions? Where does one start. I have chosen to start at the beginning of the trail and to incorporate some of the “wrecking process schema” developed by Gibbs in 2006 (Gibbs, IJNA 2006) and Mathewson’s “Galleon Matrix.”

One important aspect must be stated, while this and other shipwrecks are often called time capsules of a culture, society and time period. However, even before wrecking they are really representative of only a certain activity of that culture, whether a fishing vessel, a WWII Naval vessel or a Spanish Galleon these vessels performed a specific function.

#### 7.1.4 Southernmost Anchor

When one looks at the scatter of the *Atocha* it appears to “start” at the remains of an anchor (tag #72024) with wooden stock found 1 mile to the south of the “main pile” or Primary Cultural Deposit” of the *Atocha*. This anchor located by Capt. Gary Randolph in 2005 represents efforts of those aboard the *Atocha* to save themselves from the peril they were so clearly in. This artifact would fit into the Gibbs Schema under the “Pre-impact Stage” with attempts to stop or turn including “dropping the anchor” and into Mathewson’s Matrix in the number four area or the forecastle.

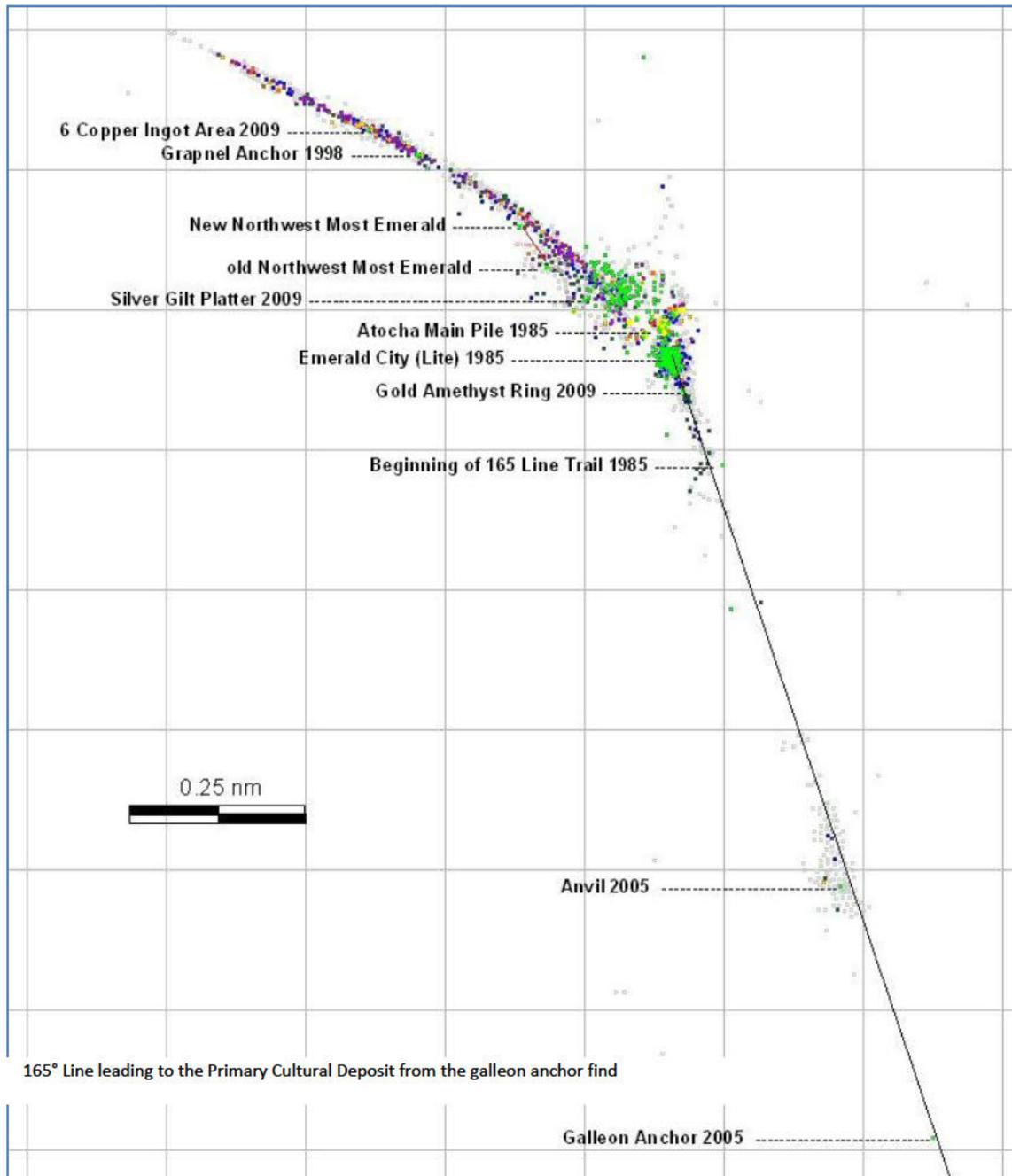
That the anchor is without the flukes or arms and has clearly been snapped along the shank speaks to the huge hydraulic stress the ship was under at the time. The vessel at this point has already crashed into the reef and is rapidly filling with water. The anchor having been deployed on the other side of the reef snaps and the *Atocha* is pushed in the direction of the winds and wind driven waves.

This line of material runs from the South, on a heading of 345° to the North and represents the area and temporal period when the majority of the passengers and crew (260 in number) would have been losing their lives. At this point we can assume many



sorts of behaviors aboard the *Atocha*, from the stern castle and the wealthy passengers to the sailors and slaves housed between decks were all of the same type - most humans will exhibit the same sorts of behaviors when faced with imminent death (in extremis). The visions this produces are not ones that need much description – indeed it would be in bad taste to dwell here. We do know from archival documentation that the priests who were on board had begun to administer the “last rites” to those they could. Many would have craved this action as it was to save their immortal soul. We also know that the officers who oversaw the ship had ordered the hatches be battened down. This had the effect of

“locking” everybody into the interior of the site.



One may imagine all sorts of brave and cowardly actions happening along this line, but this forms the extant evidence, the rest remains only conjecture. The fact is that the next great feature of the scatter of the *Atocha* is the Primary Cultural Deposit (PCD), or what the salvagers called the “main pile.”

## 7.1.5 Primary Cultural Deposit

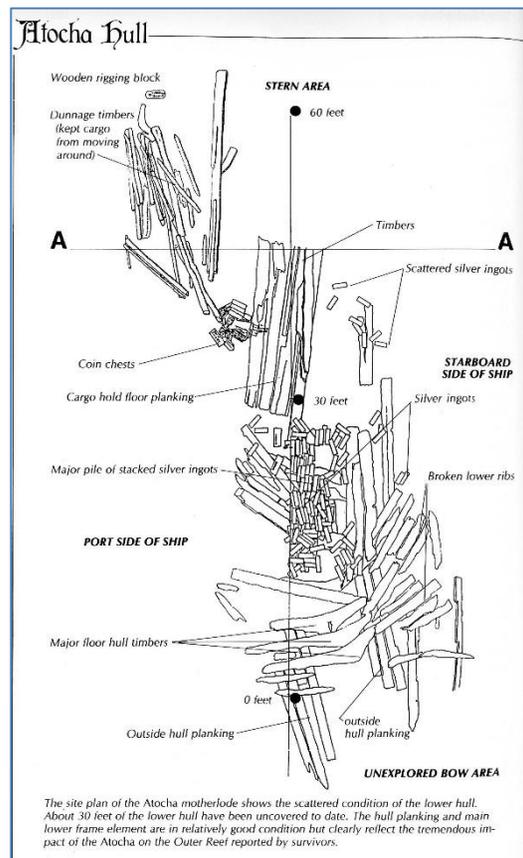
This area with its mass of intrinsically valuable cargo is indicative of a higher order of social activities and human behavior. Both institutional and mercantile/commercial activities are represented in this area. Objects found such as silver bullion bars link certain individuals or families to business interests that were global in their reach. A percentage of this cargo would have gone to the Catholic Church to support their activities that were increasingly of a worldwide nature. The human behaviors that can be associated with these objects, from their harsh origins in the mines of South America to the payment of armies fighting across Europe to builders that were erecting magnificent cathedrals using these funds.

Some classes of artifacts found in and around the PCD show behaviors that are less than legal. The discovery of large numbers of un-manifested emeralds is a direct link to the level of smuggling that was occurring during the colonial period.

We know from archival documentation that the only five survivors of the sinking were found at this spot they had lashed themselves to the stump of the mizzen mast, all that was left above the water of the *Atocha*. This survival strategy well fits into the impact stage of the Gibbs schema (see above). This is also the area that Mathewson classes as number 3 or the "Cargo Hull."



Mel & Taffi Fisher-Abt with peanut jar of *Atocha* emeralds



As shown on page #106 of *Treasure of the Atocha* by Duncan Mathewson

Archival documents also show that when the first vessels arrived at the scene of the disaster and rescued the survivors, "divers" were sent to the hulk below. They described the *Atocha* as resting in 55 feet of water and basically intact, she had been holed in the bow and was being covered with sand, she rested on the starboard side. At this juncture and without the tools or manpower necessary to begin salvage a few small rail guns were retrieved. A buoy was left on the site for the salvage crews when they arrived. This retrieval of the small guns and assessment of the site for future salvage work fits into the Gibbs schema under the "Recoil" stage. It also loosely fits into the "rescue and post-disaster stage" in that opportunistic salvage was undertaken.

It is at this point from all the available archival documentation that human activities on the wreck of the *Atocha* end. This would be the case until the last quarter of the 20<sup>th</sup> century

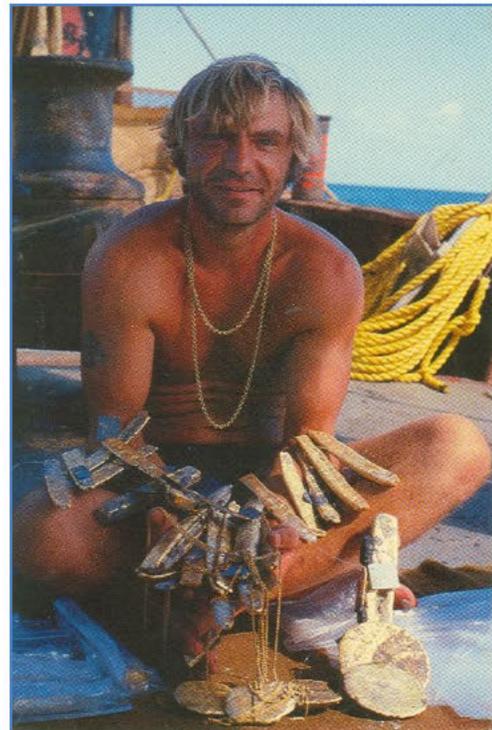
when the search and eventual discovery of the *Atocha* took place under the auspices of Mel Fisher's Treasure Salvors Inc. and related companies.

It is also at this point where Mathewson's Galleon Matrix comes into play in a more vibrant way for it is from the scattered trail and the classes of artifacts recovered along it that we can begin to interpret the assemblage in reference to varieties of human behaviors.

The Scatter of the *Atocha* wreckage away from the PCD area toward the Quicksand's area is the result of a 2<sup>nd</sup> hurricane that struck the area approximately two weeks after the initial sinking. This storm broke the upper structure of the galleon away from the ballast, silver, personal bulk cargo, copper ingots and other associated items and dragged it along the bottom in a 330° heading through the "Hawks Channel" - dropping items along the way.



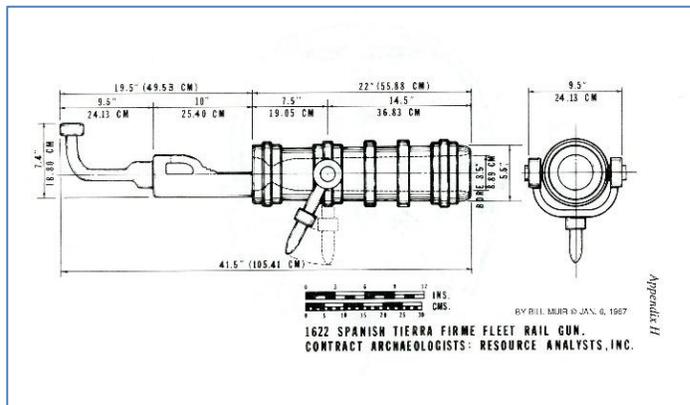
*Atocha* coin chest being measured in for site chart. Photo by Don Kincaid



Bill Moore with 77 gold bars and disks found just west of the *Atocha* Main Pile area in 1985

### 7.1.6 Scatter of the Nuestra Senora de Atocha

We can reasonably assume that for much of the attenuated trail the items being recovered were dropping out of the broken lower hull section. From the evidence and analysis of the remaining artifacts, we know that there must have been a significant hole in the hull leaving her open to the sea. The amount of structure recorded under the PCD accounts for approximately 13% of the lower hull on the starboard side and most of the materials recovered seem to have their origins in the lower hull.



A notable exception to this track of material and found somewhat to the west of the primary projected axis of the wreckage was a small cannon. According to the archival documents, Bernal de Lugo a survivor from the *Santa Margarita* marked the area of the wreckage of both the *Nuestra Señora de Atocha* and the *Santa Margarita* with a spar buoy attached to a small cannon.

This we believe is the small breech loading swivel cannon that was discovered to the East off the track of the *Atocha's* scatter in 1985. This alone is a correlation with the archival documents; however, we also know that in the second hurricane the *Atocha* began to scatter along a much-attenuated track. The highly dispersed and buried nature of this track accounts for the futility attested to in the extant archival documents in the subsequent searches for any traces of the *Atocha*. Most of the archival documents regarding the *Atocha* have to do with the inability to locate any remains of the vessel. This form of negative information fits in very well with what we know from the evidence on the seabed, i.e., that given the known distribution of artifacts on the scattered trail of the *Atocha* it would have been near impossible for the Spanish, given the primitive technology of the time, to track the remains over so long a distance. Here again we have a place where the post disaster (Gibbs "impact stage") behaviors are predictable at least to some degree.

Also, along this attenuated trail is what became known as the Memorial Day find. In this find over 2000 silver coins were recovered as well as 60 pieces of emerald jewelry and 12 gold bars. This was obviously the remains of a wealthy passenger's personal material that was ejected from the lower hull as it was dragged along the bottom. However, this may also represent an early discharge of material from the stern castle and the personal possession of the wealthy passengers and officers that were stored there. This may be the case because in this area a short section of mast was found that was tentatively described as a "boomkin", a small stay for the lanteen rigged mizzen sail that protruded from the stern.



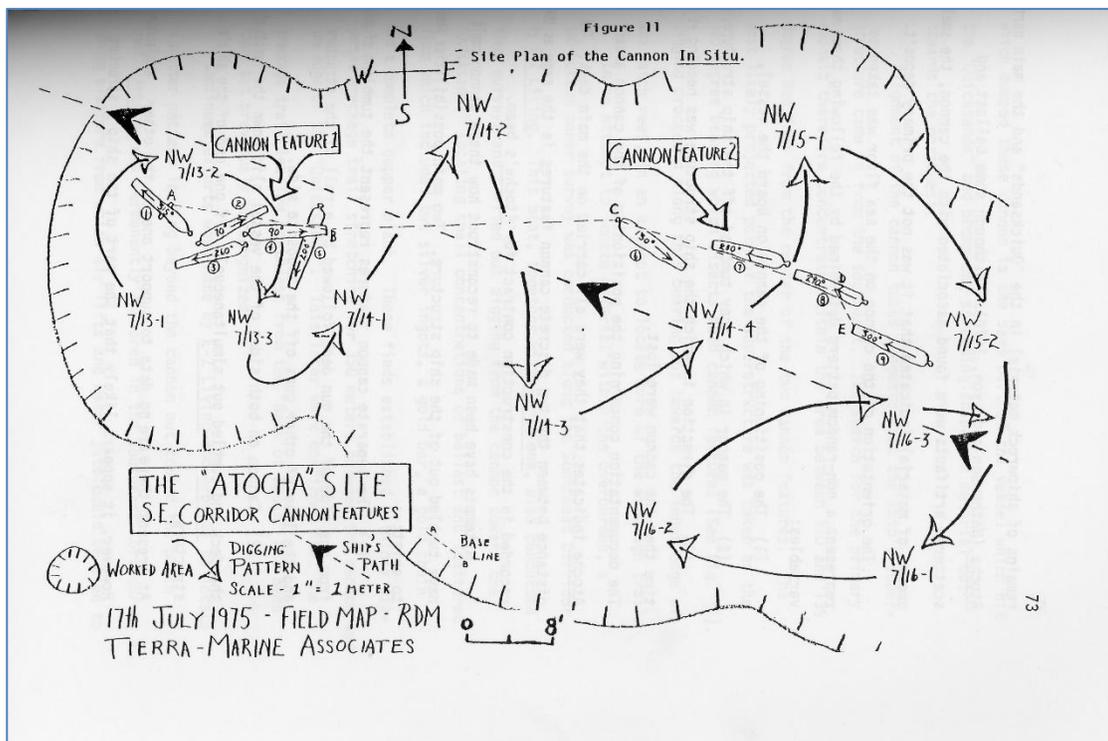
At the stern of this model a "boomkin" can clearly be

### 7.1.7 9 Bronze Cannons

The next major feature along the *Atocha* trail is undoubtedly the cannon feature at the edge of the coral plateau. It was here on July 13, 1975, that Captain Dirk Fisher and his crew discovered nine bronze cannons. These were in two groups: one group of five, and 30 feet away another group of four. The *Atocha* was 30 feet on the beam so it would appear that at this spot (which is a rise out of the Hawks Channel and represents a significant hydraulic barrier) that the hulk of the *Atocha* held for a time and was thrown side to side to the degree that 9 of its 20-bronze cannons were ejected from the gun deck and at almost the exact width of the *Atocha's* hull.



Kim Fisher and Tom Ford recovering Atocha cannon

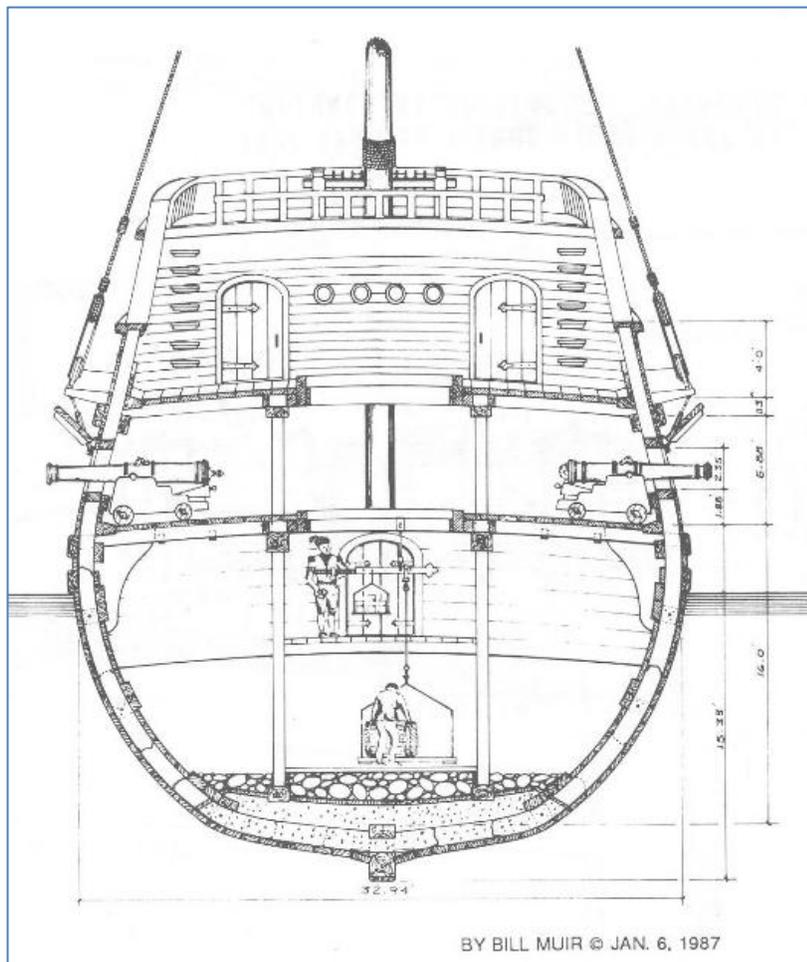


As shown on page #73 of *Archaeological Treasure: The Search for the Nuestra Senora de Atocha* by R. Duncan Mathewson III

The gun deck can be viewed through the “Galleon Matrix” Activity area Number 2 as the site of many sorts of human behaviors. The efforts to protect the ship and/or take offensive action against an enemy were centered here. Gun crews trained long and hard to be able to move, load, aim and fire these massive pieces of artillery. But much more than this took place along this deck. Much of the “crew” and the soldiers that were on-board the *Atocha* were likely housed along this deck, food was served to the various watches on this deck, sleeping and socializing among the crew also took place along here. While a whole host of human behaviors are potentially represented on this deck the cannon area yielded little else aside from the cannon themselves. The *Atocha* now minus the weight of much of the ballast and now the loss of the nine-bronze cannon became light enough to be forced up and over the “Coral Plateau” area.



*Mel Fisher & Eugene Lyon identify  
Atocha bronze gun #2499*





*As shown in Appendix II of  
The Search for the Atocha by Eugene Lyon*

*Appendix II*



*Cannon 2499 Nuestra Señora de Atocha discovered in July, 1975 and  
identified from Atocha's gun list.*

Cama		
Capitana	Vn m. Canon guerra	60 <sup>8</sup> 49 <sup>3</sup>
	Vn m. canon <sup>2</sup> pesa	46 <sup>8</sup> 16 <sup>3</sup>
	Ara Pesa <sup>2</sup> Pesa	31 <sup>8</sup> 53 <sup>3</sup>
	Ara Pesa <sup>2</sup> Pesa	32 <sup>8</sup>
	Vna a Julivina <sup>2</sup> Pesa	66 <sup>8</sup> 20 <sup>3</sup>
	Arapuca <sup>2</sup> Pesa	87 <sup>8</sup> 03 <sup>3</sup>
	Ara Pesa <sup>2</sup> Pesa	32 <sup>8</sup> 63 <sup>3</sup>
	Vna Pesa <sup>2</sup> Pesa	31 <sup>8</sup> 63 <sup>3</sup>
	Arapuca <sup>2</sup> de Cole de los di. m. de la casa y tra. lo v	20 <sup>8</sup>
	Ara Pesa <sup>2</sup> Pesa	14 <sup>8</sup> 17 <sup>3</sup> Ros
	Ara Pesa <sup>2</sup> de No. de los di. m. de la casa y tra. lo v	0
	Arapuca <sup>2</sup> Pesa	31 <sup>8</sup> 09 <sup>3</sup>
	Ara Pesa <sup>2</sup> Pesa	30 <sup>8</sup> 88 <sup>3</sup>
	Ara Pesa <sup>2</sup> Pesa	29 <sup>8</sup> 15 <sup>3</sup>
	Ara Pesa <sup>2</sup> Pesa	28 <sup>8</sup> 16 <sup>3</sup> Ros
	Ara Pesa <sup>2</sup> Pesa	13 <sup>8</sup> 33 <sup>3</sup> Ros
	Ara Pesa <sup>2</sup> Pesa	25 <sup>8</sup> 88 <sup>3</sup>
	Ara Pesa <sup>2</sup> Pesa	26 <sup>8</sup> 61 <sup>3</sup>
	Vn Pedruz <sup>2</sup> Pesa	26 <sup>8</sup> 51 <sup>3</sup>
	Ara Pesa <sup>2</sup> Pesa	25 <sup>8</sup> 58 <sup>3</sup>
	Vn m. Canon guerra	25 <sup>8</sup> 03 <sup>3</sup>
	Vn Pedruz <sup>2</sup> guerra	17 <sup>8</sup> 40 <sup>3</sup>
	Vna Pesa <sup>2</sup> Pesa	27 <sup>8</sup> 08 <sup>3</sup>
	Vn canon <sup>2</sup> Pesa	21 <sup>8</sup> 99 <sup>3</sup>
	Ara Pesa <sup>2</sup> Pesa	45 <sup>8</sup> 11 <sup>3</sup>
	Vn Pedruz <sup>2</sup> Pesa	17 <sup>8</sup> 80 <sup>3</sup>

AGI Indiferente General 1,144 page 1 gun list of Nuestra Señora de Atocha. (see no. 24q99L) This is the gun that was donated by Mel Fisher to Queen Sofia of Spain. It is now in the Archives of the Indies, Seville, Spain.



*Mel Fisher presenting the finest Atocha bronze cannon #2499 to Queen Sofia of Spain at the National Geographic Society in Washington, DC.*



*Atocha bronze cannon in the Archives of the Indies in Seville Spain*

## Bronze Cannon on the *Santa Margarita* and the *Nuestra Señora de Atocha*

by Eugene Lyon  
circa 1980's

On 12 December 1621, in Seville, Toras Velazquez de la Cueva, Supply-keeper for the avería administrators received the bronze cannon issued by the Mayordomo of Artillery for the several ships of the Guard Fleet under the Marqués of Cadereita which was to go in 1622 to Tierra Firme and to guard the Tierra Firme fleet.

It was after this date that the accident to the Capitana San Francisco occurred upon leaving the San Lúcar bar. Her guns were doubtless re-distributed among the other vessels, but the 12 December list, from AGI Indiferente General 1144, is the latest extant. The cannon list for the two ships follows, with an 'X' beside those guns salvaged by Francisco Nunez Melian or Treasure Salvors, Inc., as the case might be:

### Nuestra Señora de Atocha

#### Medios Cañones

2,503 lb.

3,022 lb.           X – Treasure Salvors

#### Medias Culebrinas

4,252 lb.

#### Cañon

2,652 lb.

2,499 lb.           X – Treasure Salvors

#### Piezas

2,708 lb.

4,577 lb.

3,157 lb.

3,245 lb.

2,711 lb.           X – Treasure Salvors

1,354 lb.

1,352 lb.

3,307 lb.

3,289 lb.

3,078 lb.

3,110 lb.           X – Treasure Salvors

#### 6-lb. Sakers

2,214 lb.

2,000 lb.           (no number but has shield and was made in Genoa)

#### Pedreros

1,780 lb.

1,740 lb.

Note: Five other bronze cannons were found associated with the four captioned above, at the same site, but those were worn smooth and exhibited no number markings. It is apparent that the designations on this list do not correspond with the general type-weight categories of Spanish guns. The name "pieza" which simply means "gun," has no meaning among the typology of Spanish cannon; this is borne out by the range of weights listed under

that category. This writer has the cannonball silhouette diagrams from the Simancas archive and suggests that the balls found to date be correlated as to estimated original diameter. These then tie to the several known gun types.

Santa Margarita

Medios Cañones

3,244 lb. X – Nunez Melian

3,149 lb. X – Nunez Melian

3,854 lb.

3,077 lb.

Pieza

2,409 lb.

2,749 lb. X—Nunez Melian

2,706 lb.

2,910 lb.

2,625 lb.

2,364 lb.

4,313 lb.

2,944 lb.

2,601 lb.

2,567 lb.

2,397 lb.

2,331 lb.

Portuguese Pedrero

2,000 lb. (with aldavas and 2 tangetas without number or weight)

NOTE: this maybe the pedrero recovered by Melian and listed at 1,608 lb.

1,228 lb.

NOTE: this may also have been recovered by Melian; on 2 June 1627 his divers brought up another pedrero without markings.

The Melian salvage of cannon is described in AGI Contaduría 1,112. Gaspar de Vargas is variously described as having salvaged two or four guns in the interim between the two hurricanes of September and October, 1622 ("Having salvaged two pieces of artillery, since he did not find any more above the main ((gun)) deck, he buoyed the galleon with a cable---"from Marques de Cadereita to the Crown, Havana 10 January 1623, AGI Santa Domingo 132). Governor D. Francisco Venegas states that Vargas recovered "four bronze cannons" from the Atocha ("Demand of Captain Gaspar de Vargas," Havana, 5 April 1624, AGI Contratacion 2,988).

Melian also salvaged six cannons in addition to those listed: Nos. 4900 (a very heavy gun), 2314, 2627, 3000, 2299, and 2312.

Treasure Salvors, Inc. has salvaged from the Santa Margarita site two heavy bronze guns. One of those weighed out close to 4,313 lb., but neither bear shield nor weight marking that are legible enough for identification. It is doubtful that the Santa Margarita exceeded the size of the Atocha enough as to permit the mounting of the eighteen guns on the original list plus the six additional one's salvages on the site by Melian, although this is possible. There may therefore have been other substitutions of guns before the sailing of the vessel.

The word aldavas probably meant aldabones---handles or lifters.

The Genoese saker described on the Atocha list seems typical of guns from that foundry; another without weight mark, a twelve-pounder, is described in AGI Contratacion 3,893; the Portuguese pedreros are also listed there. In that same document bundle, an audit of guns founded or present at Seville, a metal shortage of an average of seventy pounds was found in 105 guns.

The arms lists (see above) for the Guard galleons note that the stone cannonballs, several of which have been found at each of the two sites, were intended for use in the pedreros. It is thus clear that this word did not mean a gunwale-mounted swivel guns but rather a wide-bore deck gun. There is a sample of the 17<sup>th</sup> century bronze pedrero in the Museo de Artilleria, Madrid. The forgoing is not intended to be an exhaustive study of the guns. Further work will involve tracing the guns found onsite with weight numbers and other identifying markings to the foundry records in Seville. For purposes of hull reconstruction, however, this material has been furnished. The reader is further directed to the following:

R. Duncan Mathewson, "The Guns of the *Nuestra Senora de Atocha*," typescript, 1976.

Albert Manucy, "Preliminary Study of Artillery at the fort of St. Augustine in 1580," typescript, St. Augustine, Florida, 1975.

Albert Manucy, "Artillery Through the Ages," Washington, U.S. Government Printing Office, 1949.

Paul E. Hoffman, "Report on Artillery (Seven Parts)," typescript, St. Augustine, Florida, 1976.

I have included a Xerox of the later Manucy report because of its clarity and its application to Spanish guns; this last is often lacking in other works on colonial cannon.

**SANTA MARGARITA --- list of bronze cannon**

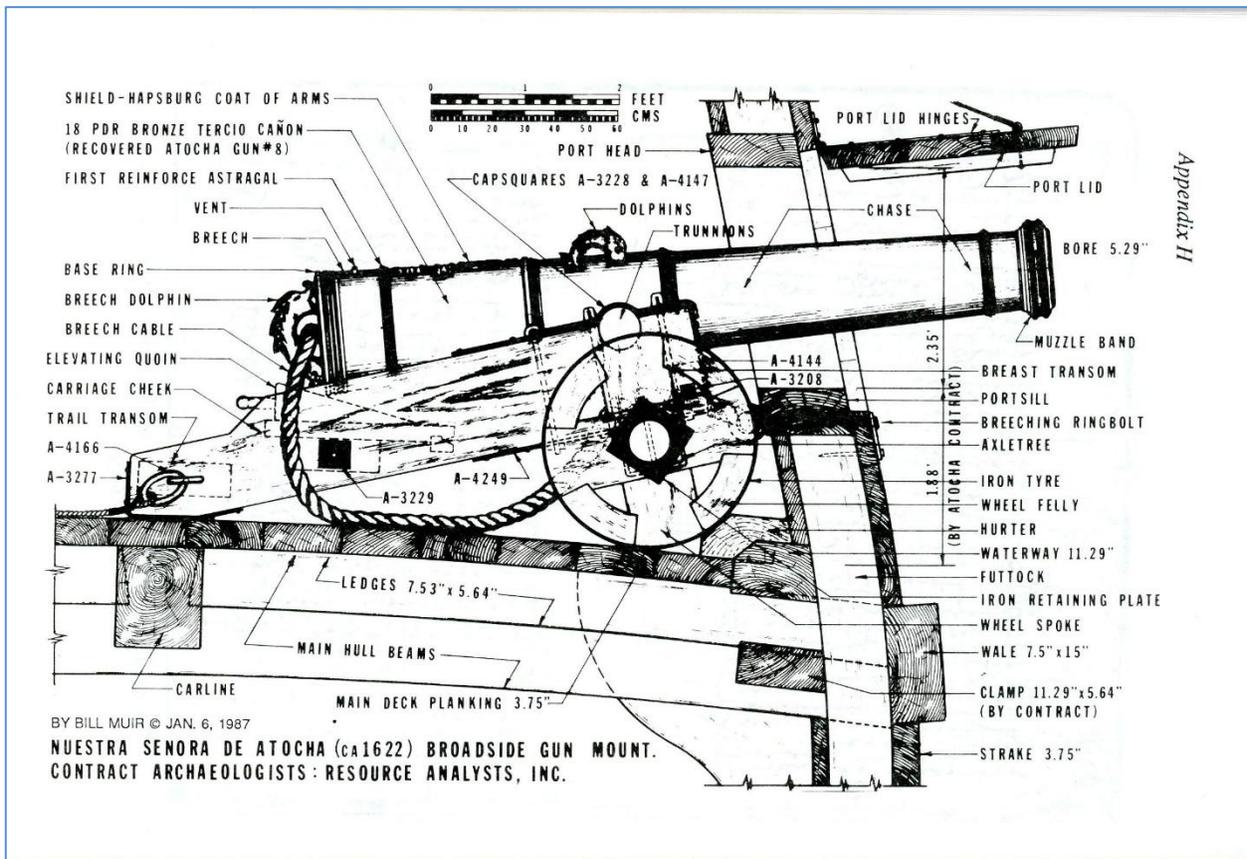
(From A.G.I. Indiferente General 1,144)

Piece	2,409 lb. (Castilian)
Piece	2,749 lb. NOTE: Salvaged by Spain
Piece	2,706 lb.
Medio Canon	3,244 lb. NOTE: Salvaged by Spain
Piece	2,910 lb.
Piece	2,625 lb. Salvaged?
Piece	2,364 lb.
Piece	4,313 lb.
Medio Canon	3,149 lb. NOTE: Salvaged by Spain
Medio Canon	3,854 lb.
Piece	2,944 lb.
Piece	2,601 lb.
Piece	2,567 lb.
Piece	2,007 lb. (3,077)
Portuguese pedrero	2,000 lb. with aldavas and 2 tangetas without number or weight NOTE: Salvaged by Spanish
Portuguese pedrero	1,228 lb. NOTE: Salvaged by Spanish
Piece	2,397 lb.
Piece	2,331 lb.

NOTE: Five more bronze pieces salvaged by Melian which do not match any of the weight numbers on this list.

Currently there are four of the *Atocha* bronze guns on public display at the "Treasures of the Sea" Exhibit on the Delaware Technical Community College campus located at 21179 College Drive in Georgetown, Delaware 19947

<http://www.treasuresofthesea.org/>



### 7.1.8 Coral Plateau

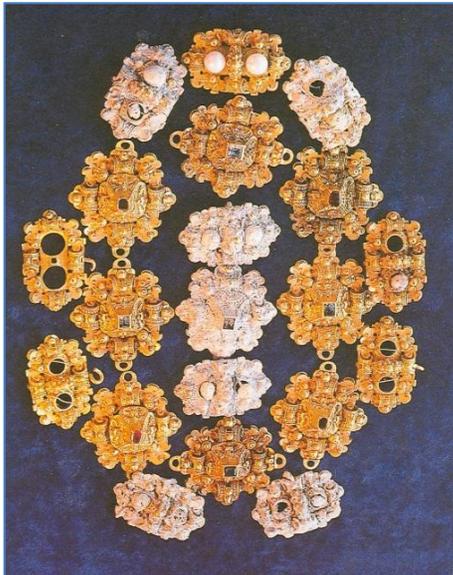
This area represents the first major barrier that the hulk of the *Atocha* encountered as the second hurricane propelled it across the seabed. It was on the southern edge of this barrier where the cannons were discovered, and after losing this mass of weight the wreckage of the *Atocha* was forced over the plateau and across towards shallower water.

Across this plateau a variety of artifacts were recovered, for the salvors the most important was a collection of four silver bars found in the mid 1970's one of which had markings that could be matched to the manifest of the *Atocha*. This was proof positive that part of the *Atocha* had been found and was important in the ongoing legal battles over the treasure.

On this area nearly a decade later Captain John Brandon found what would become called the "Cinta". This fine collection of jewelry set with diamonds, rubies and pearls was part of a set of 22 that were meant to be worn around the waist of a lady of wealth. What we seem to be seeing is a dispersal of material that is both from the fractured lower hull (silver bars), and the cabins of the wealthy in the stern castle (cinta). While the cinta may represent part of a chest of a wealthy passenger from the lower hull there is no doubt that as the *Atocha* left this material across the plateau that the next barrier would begin a dispersal of objects much more dramatic than any except the PCD itself.



John Brandon finding Cinta Belt links





#### **7.1.10 *Atocha* Artifact scatter - division of direction**

It is also in this area where using our GIS program we begin to see the divergence of the two sections and what they were carrying as it was distributed along the bottom. There are two distinct trails. One heads from the conglomerated materials at the leading edge of the Quicksands and the Bank of Spain toward a roughly Northerly direction. The other track of material leads away to the North-Northwesterly direction.

Careful recordation of location and analysis of the categories of materials, keeping in mind the various types of interpretive lenses we can pass them through such as the “Galleon Matrix” with its activity areas, and associated behaviors, allow us to make assumptions on what sections of the ship were driven in these two directions.

#### **7.1.11 Northern Track**

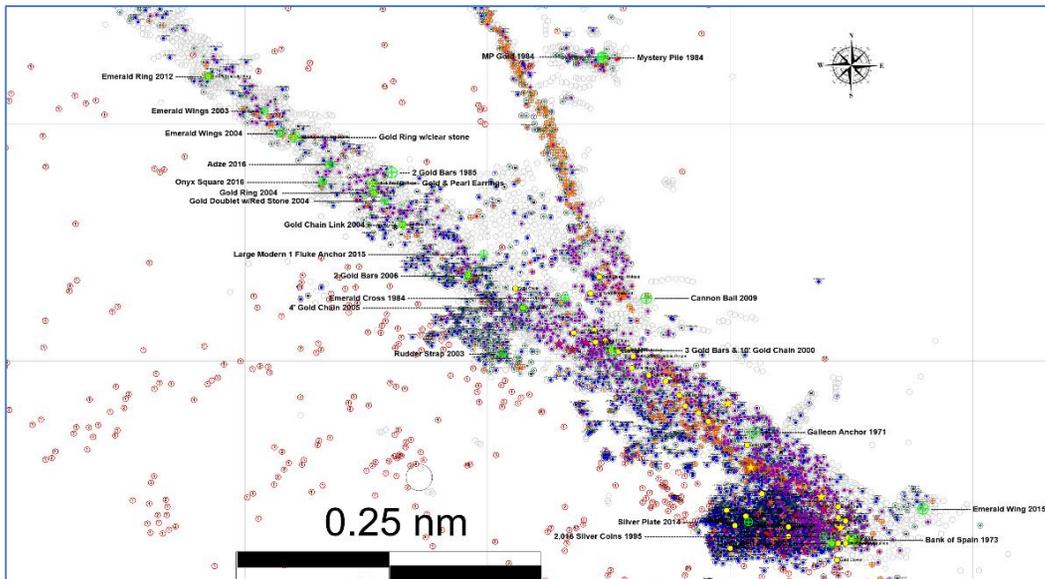
It is without any doubt that some scattered sections of the *Atocha* existed with some significant integrity. On the Northerly track in 1984 while conducting diver towed visual surveys the tenth bronze cannon from the *Atocha* was located. Further north from that two galleon size anchors were discovered. Obviously, a large section of hull was being driven forward along this line. Discoveries along this line over the past years have produced a set of carpenter’s tools and a chest of iron nails. This represents an extremely important collection of material. The ship’s carpenter would have held a valued place in the crew, after all, this was a vessel made of wood and any problems with its structure or function would have been in the realm of the carpenter. We also know that traditionally these sorts of stores and supplies would have been located in the bow section. This corresponds to the “Galleon Matrix” activity area 4 or the forecastle.

The presence of the two galleon size anchors to the north re-enforce this. So, we can say with some assurance that on this northern track we are dealing with at least a significant section of the bow or forecastle of the *Atocha*. Of course, these two anchors were never deployed before the wrecking and most likely held on the wreckage as they were stowed for sailing. Along this track we have also recovered a “breech block” for a breech loaded cannon. Although as yet no cannon that would take such a block has been found. Approximately 488 lead musket balls have been recovered attesting to the storage of at least some of the ammunition in this area of the ship. We can say, with some assurance, that the bronze cannon was one of the forward cannons on the ship.

### 7.1.12 Northwesterly Track

It is on this track of material that we begin to see some of the trappings and items of importance to the wealthy passengers and officers aboard the *Atocha*. If one looks at the map that highlights this division of material at the base where the two tracks diverge one can find the location of a “rudder strap.” The rudder attached to the very stern of the vessel passed this way and from its position it is possible to say that it was close by here that the *Atocha* was torn asunder. The collection of materials from along this Northwesterly track is vastly different from that of the North track.

Along this track has been found high value items that represent some of the prized possessions of the wealthy clergy and powerful elite who were traveling aboard the *Atocha*. It was from this area that we recovered the “bishops cross and ring”, gold bars, chains, rings set with high value jewels, the solid



Rudder Strap Area Chart

gold bernagal, the emerald “wings”, the first mariners astrolabe and, of course, silver coins. There can be no doubt that we are seeing spill from the stern of the *Atocha* along this line. It could also be noted that the Bishops Cross and Ring, as well as all the large gold chains found, were also “NOT MANIFESTED.” While not illegally shipped such as other smuggled items, the large gold chains were a form of tax avoidance since jewelry was not considered taxable.

The wealthy passengers would have brought their most valued possessions into these cramped cabins. This would include their families, special foods (such as sweets like candied fruits) clothing, luxury items and objects too valuable to stow in the bulk cargo areas of the ship. A quick glance along this line of material gives one a good indication of what sorts of items these might be.

In conclusion, as the work on the *Atocha* continues and with the utilization of the GIS technology and the “Galleon Matrix” model, we can begin to pick out the patterns of artifact dispersal across the seabed and relate them to various activity areas aboard the vessel. This in turn allows us to make hypotheses as to where other like material may be found and for the first time extrapolate some of the human behaviors that surround each area of finds on the seabed. Truly we are with technological advances entering an age where middle range theoretical constructs can be postulated and tested with an eye toward answering larger anthropological questions.

Sadly, much of the artifacts that once comprised this great ship are gone, much of the structure is washed away. Those items that could still float were dispersed in the first and second storm and the

fragile organic components that once were integral to the *Atocha* are no more due to ongoing in-situ deterioration. Yearly there is less even of the more durable materials as the iron and other metals slowly return to inert ores and sulfides. We have been honored through the last 50 years to be involved in the recovery of this great treasure, both of artifacts and knowledge.

Dogged work and recoveries will help to expand on our knowledge base and we hope to make more strides towards the location of some of the yet unfound major sections of the *Atocha* in the coming years. We eagerly look forward to this and the next years of recovery that will allow us to keep moving forward in this important archaeological investigation.

### 7.1.13 Question #2

The second question that we posed in our last renewal request was:

***“Can artifacts from the Atocha give us insight into the religion that was so important in the formation of the Latin American Colonies, and conversely can we see evidence of New World adaptations to “fit” the cultural groups encountered?”***

While it was axiomatic that the Spanish would bring their religion with them to the new world one must attempt a bit of cognitive archaeology at this juncture. ***Cognitive Archaeology*** is a sub-discipline of archaeology which focuses on the ways that ancient societies thought and the symbolic structures that can be perceived in past material culture. Humans do not behave under the influence of their senses alone but also through their past experiences, such as their upbringing or group history. These experiences contribute to everyone’s unique view of the world, a kind of cognitive map that guides them. Groups of people living together tend to develop a shared view of the world and similar cognitive maps which in turn influence their group material culture.

The Spanish when they entered the New World for the first time came with a set of beliefs and a world view that was shaped in large part by their religion and history.

The picture that most Anglo students have of the Spanish in the New World is most likely that of a helmeted conquistador. While those who study Spanish New World history know that this is a facile image, just where did the Spanish mind set come from?

One need only look at the history of the Spanish homeland to understand the warrior (conquistador) mentality. In 700 AD the Moors conquered the Iberian Peninsula and from that time until 1492 under Ferdinand and Isabella wars and battles would be fought between the Christian Kingdoms and those of the Muslim Moors. Many of the Christian Kings who sought to wrest control of Spain away from the Moorish Caliphs had already expended time, effort and resources attempting to conquer the Holy Land during a series of “Crusades” that took place over hundreds of years. All the while the Catholic Church held near absolute power as a theocracy that stood behind the thrones of many of the European Kingdoms. This long period of Spanish history became known as the “Reconquista” or the re-conquest. It is no wonder that the largest groups of early Spanish to the New World were the warrior caste.

By the year 1622 there had been much work done by various religious orders of the Catholic Church in converting the indigenous populations of the New World and dismantling the previously existing “heathen” temples and religions. As a Spanish subject you were a Catholic or you were not a Spaniard. This was made abundantly clear during the forced conversion or expulsion of the Jewish population in the Catholic homeland. Religions other than Catholicism in Spain and her colonies were banned or forced deep underground.

But all the conversion was not a harsh undertaking. Indeed, one of the hallmarks of Christianity’s wide appeal was its fluid adaptability. This had been the case since the time of the Roman persecutions of Christians and it remained the case with the populations encountered in the New World. The Catholic

Church was adroit at melding indigenous observances, ceremonies, feasts, and holy days into an understandable and comfortable world view for the newly converted. One of the most popular figures in New World Catholic Iconography is that of Our Lady of Guadalupe, who is pictured as an indigenous figure and embracing of that population.

While we now have a better understanding of how Catholicism operated in the New World, how will that translate to the *Atocha*? What are the religious artifacts recovered from the *Atocha* and can we see evidence of the efforts of the Catholic Church's adaptability to the New World, and what were the important religious artifacts for those aboard the *Atocha*?



The following is a selection of two religious items both wealthy and from the lower class aboard the *Atocha*.

Perhaps the most stunning religious artifact recovered from the *Nuestra Senora de Atocha* is the Emerald Cross. This was recovered from the Northwest trail of material near where it diverges into two distinct tracts. The Cross is a baroque style and there are traces of enameling that can still be seen on the cartouches at the end of the uprights. It is set with 70 carats of extremely fine Muzo emeralds. The reverse of the cross is a masterwork of engraved imagery. The upright is engraved with a representation of St. Anthony of Padua,

Saint Anthony is a Franciscan Order Saint so it may be reasonably assumed that the cleric to whom this object belonged was derived from that order. Another interesting and somewhat ironic aspect to Saint Anthony is the fact that he is the "patron Saint of lost things".

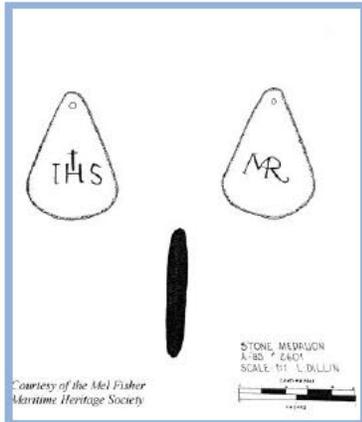
The Iconography flows downward toward the foot of the cross where we find a pineapple, this is a purely new world image and its inclusion on this object reflects the enculturation processes at work during this time. Below this at the base is an image of the Madonna and Child that is known as the "*Nuestra Senora de la Leche*" or "*Our Lady of the Milk*". One of the oldest shrines to Catholicism in North America is in St. Augustine, Florida founded in 1565. The Mission that was founded was *Nombre de Dios*, and the earliest Chapel there was dedicated to the *Nuestra Senora de la Leche*;

***The history of the devotion to the Mother of Jesus as Our Lady of La Leche may have roots in a 4th Century grotto in Bethlehem. To this day the Franciscan community maintains a shrine there called the Milk Grotto. Its centerpiece is the Blessed Virgin nursing the infant Jesus. Many believe that the crusaders brought the devotion to Mary as a nursing mother to Spain in the Middle Ages.***

***During the reign of Phillip III in Spain, word spread of a nobleman's wife and baby, expected to die during the birth of the child, who were both spared as a result of the intercession of Nuestra Senora de la Leche y buen parto (Our Lady of the Milk and Happy Delivery). The statue, in possession of the nobleman, soon found a place in the hearts of many throughout Spain.***

***By the early 1600's the devotion, under the title of Nuestra Senora de la Leche y buen parto, had a special place in the lives of the Spanish settlers and the converted Native People in St. Augustine.***  
[http://www.missionandshrine.org/la\\_leche.htm](http://www.missionandshrine.org/la_leche.htm)

It and the obvious connection to the Franciscan Order seem to have spread well throughout the American Colonies of Spain by this time period.



At the other end of the social spectrum represented by those aboard the *Nuestra Senora de Atocha* was a simple Jadeite pendent the type that might have been comfortably worn by the aboriginal population of the new world at that time. We know for example that there was at least one high ranking person of mixed race aboard the *Atocha*. However, the materials that we have found that we believe are associated with this individual reflect a more Latinized conception of wealth (i.e., they were made of silver). This object may have been in the possession of its owner(s) from before the person or his/her family was Christianized. Jade and Jadeite were a highly coveted stone used by aboriginal groups long before the arrival of the Spanish and the concomitant western influences.

IHS is the Chi-Rho or the Greek abbreviation for the name Jesus Christ it was adopted and used heavily by the Jesuits or the "Society of Jesus". On the opposite side in the monogram MAR, this is believed to be representative of Mary. However, these sacred images seem to have been added to what was at one time an Amerindian ornament, so the combination is of great interest.

#### 7.1.14 Question #4

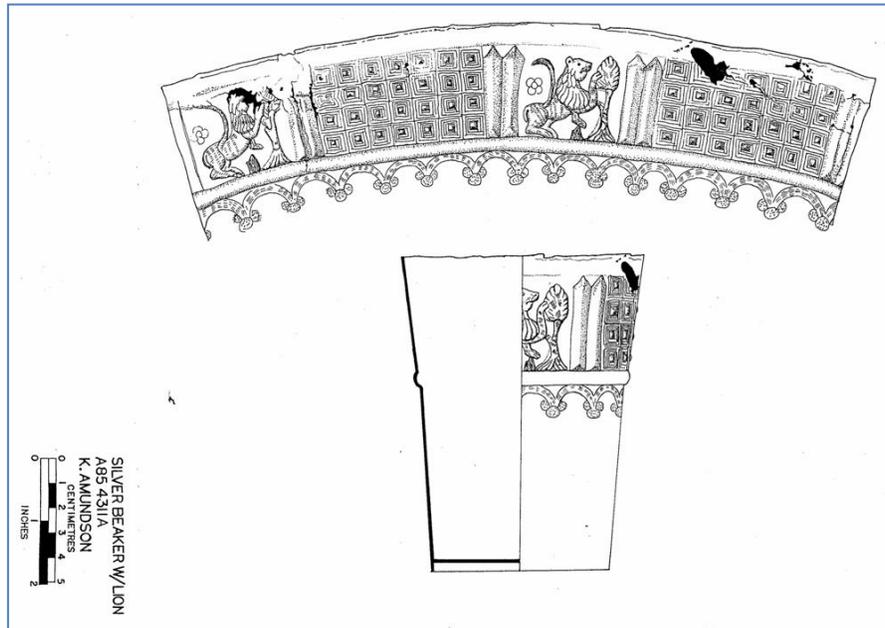
Our fourth question that was posed was specific to a particular group of artifacts that have been recovered and these reflect a dynamic time period in the history of South America.

***What does the presence of Amerindian artifacts aboard the Atocha indicate? What does their presence there suggest as human behavior patterns and can we find correlates from other time periods?***

These artifacts represented one type of silverware from the collection. These were containers, flatware and plates that showed a difference in decorative iconography and formed from the majority of other silverware. "Mestizo" silverwares (Mestizo was the word used by the Spanish to denote a person of mixed Spanish and indigenous blood) revealed iconographic motifs that showed quite starkly the two disparate cultures coming together and mixing (enculturation). It is here perhaps that we have the possibility of drawing inferences concerning the enculturation process, a reflection of the events that produced this melding into the hybridized cultural structure that today's Latin America would become.

### 7.1.15 Objects

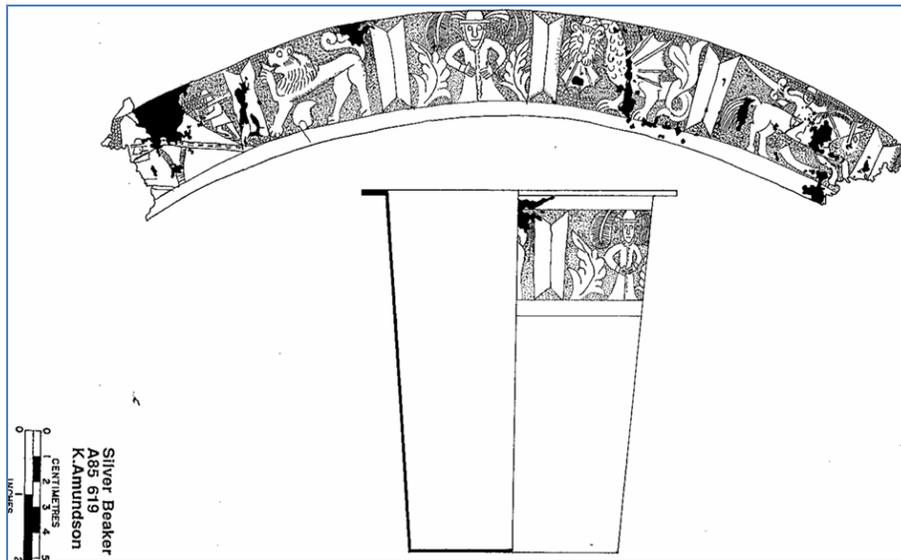
These objects were varied in form; beakers, bowls, plates and one special spoon made up most items, in addition to nested silver boxes and fragments of objects. Perhaps some of the most dramatic were the beakers, most likely drinking vessels used in Andean aboriginal ceremonies.



Beaker showing a lion with field of concentric squares

Items like these have been found in Incan grave sites dating to the 11<sup>th</sup> century AD. However, unlike the more ancient pre-Columbian pieces which were decorated with floral and animalistic designs we have instead an object whose form is identical to the more ancient forms but whose artistic motifs have been impacted by the advent of the Spanish. The lion on this object was clearly executed by an artist that had no knowledge of what a lion (one of the symbols of Spanish royalty) looked like.

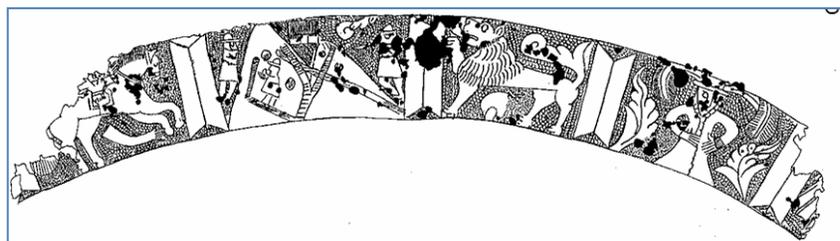
Another example of the iconography associated with these beakers shows in several panels the view of the Spanish overlords by the indigenous craftsman that created the object:



*Beaker showing Spanish Grandee*

In this instance we see several panels that represent a uniquely indigenous viewpoint. In the center is a Spanish grandee; we can deduce this from his style of dress, especially by the presence of (ostrich?) feathers in his hat, that he is someone of importance. There is yet another lion symbolized on this vessel, to the extreme right panel we can see a horseman and under the horse is a dismembered arm.

On a second cup bearing remarkably similar pattern we can see persons traversing mountain trails this may be representational of the mountain of Potosi, where the bulk of silver production in South America took place.



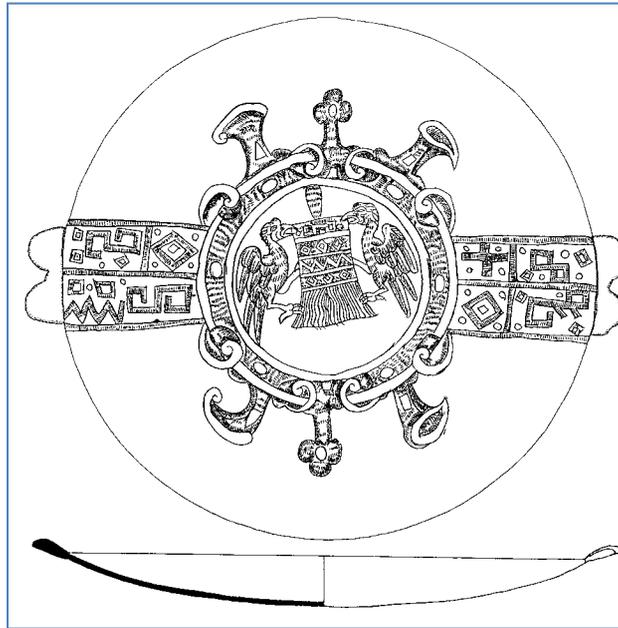
*Beaker design showing mountain trails*

On this design the mountain and the trails leading up (or in) the mountain is clear as are the people wearing hats (Andean style) and the dismembered arm under the horse.

These images on just these two cups show a great amount of interaction between the two cultures. The mountain of Potosi, where most of the silver was being produced, was a focal point activity for both the Spanish colonizers and the subjugated Andean population. There were however gradations in the social system in the Andean region that did not occur in other Spanish colonies.

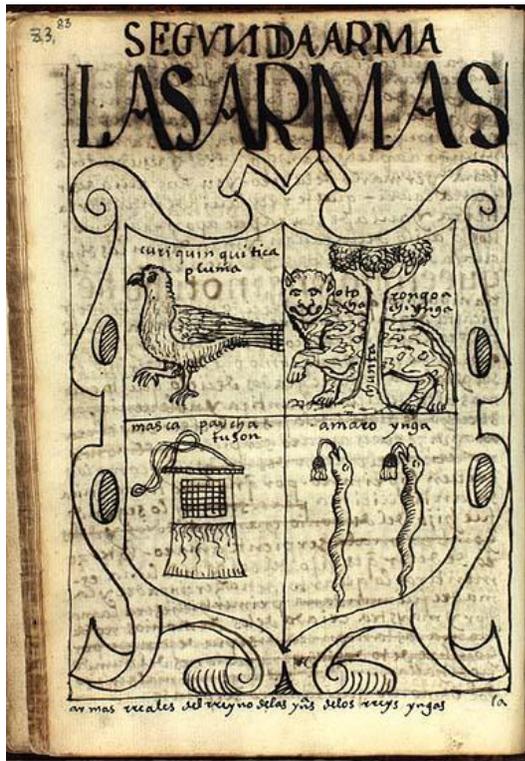
When the conquest took place, the Spanish were encountering people who owed their allegiance to the Inca Empire. There was a class system already in place which the Spanish took advantage of. Incan royal families were incorporated into the Spanish culture by the bestowal of titles and the accompanying

family crests. In this way, the Spanish conquistadores, far from alienating the ruling class subsumed them and intermarried creating the Mestizo class. These classifications were an important means of governance in a culture that had achieved such a high level of civilization. One such heraldic crest was recovered from the *Atocha*:



*Silver plate with Heraldic crest*

In the above illustration we see a plate that combines both elements of European art (the scrollwork on the center circle) with that of indigenous art (the center design and the two bands running out to the handles). Perhaps the most telling is the center design here we see two condors the giant bird of the Andes holding aloft a woven cloth (known in Incan culture as a quepu). Both of these symbols were indicative of the Incan Royalty. A similar cloth can be found in Guaman Pomas ,1615, El primer *Nueva corónica y buen gobierno*.



Guaman Poma, *Second Crest of the Inca*, 1615

Note the inclusion of the quepu as well as the iconography of the bird (condor). Interestingly the scroll work around the design, as a decoration from the printed work of Poma, is essentially the same as that of the plate in question.

These unique artifacts, along with the wealth of historical documents concerning the *Atocha*, the colonial administration of Peru and accounts such as those of Guaman Poma, offer a unique opportunity to view enculturation processes at work in the Andean region in the early decades of the 17<sup>th</sup> century.

This one small subset of artifacts allows us to view through the eyes of the conquered people images from their daily lives; from the haughty attitude of the grandee, the cruelty of the Spanish conquerors, the forced labor at the mines of Potosi, and the seduction of power invested by the Conquerors on those deemed worthy. In reviewing the iconography of these artifacts, we can pose questions regarding human behavior, particularly the enculturation process, which is partly of the aim of middle range theorizing. For example, in what ways does the iconography present on the Mestizo silver recovered from the *Atocha* reflect the world view of the indigenous

peoples? Clearly, even from the disproportionate sizes of the characters, i.e., the grandee and the sword-wielding figure in relation to the figures of the workers, suggests a power differential borne out by the historical documentation.

What aspects of the iconography show the melding of the cultures? Overall, the use of motifs demonstrates a blending of artistic traditions evident in the beakers field of concentric squares and the scroll-like decoration used as enhancement on some objects. Perhaps the most poignant of the pieces is the plate with the condor crest, reflective of not only Spanish machinations regarding the rule of the conquered peoples, but also indicative of the yearning of the conquered for standing in the new social structure. The family crest as represented by the condor plate is an example of the Spanish imposition of their own social and class systems by favoring certain individuals and raising them in status.

We must however be careful when making statements from such a small subset of artifacts. Remembering that they are derived from a site which represents skewed social categories at best and which has undergone the winnowing process of a hostile environment, losing large percentages of materials that might have told a more complete story. Nevertheless, we can from the evidence in the archaeological record, and from the documentary sources, begin to piece together a picture of life for the indigenous peoples in the Viceroyalty of Peru nearly four centuries ago. But we must by force use the historical particularism of earlier archaeological thought to begin to approach middle range theory on shipwrecks such as the *Atocha*.

It might be asked if all of these objects were the property of one person. We know that *Diego de Illescas*, was a high-ranking mestizo gentleman aboard the *Atocha*. However, there seems to be quite a few of these objects. Perhaps we need to view this a more common human behavior. Could items such as these have been mementos of a wealthy passenger's life in the New World a sort of 17<sup>th</sup> century souvenir? I believe that these represent a mix of at least both of these functions. Today when we travel, as in the

past, travelers often carried home mementos of their journeys from their former lives. We can safely assume that those aboard the *Atocha* participated to some degree in this same human activity, and that some of these unique items represent this sort of object.

Research into these fascinating cultural transformations is ongoing, the presence of the indigenous or New World's influence is present in many objects, the pineapple on the emerald cross, the condor coat of arms, llamas on the Taza, and conversely Spanish iconography on native objects, such as beakers and the like. A simple pendant made of jadeite, with the inscriptions of Christianity carved in. These are the clearest examples, but ongoing work may reveal more it is to be hoped that in this next "certification" from the FKNMS, many more such objects will be revealed that will help shed light on this dynamic time in the Americas.

#### **7.1.16 Conclusion**

In conclusion it is obvious that the *Atocha* and *Margarita* are yielding - albeit over a long period, substantial archaeological and anthropological information. The ability to properly interpret this information is enhanced by our evolving technology and developing theoretical frameworks. We are very excited by the prospects of what the future holds. We once again respectfully request that the Florida Keys National Marine Sanctuary continue their long support of this project by renewing our certification for a further 5-years.

The overriding recommendation that we have at this point is a continuation of the exacting work being undertaken. In the investigation of this challenging shipwreck, there is much to find and there is no good way to estimate how long finding the remains of this wreckage will take. Simply looking at the number of magnetometer anomalies that have yet to be investigated gives some idea of the scope of the work. Sadly, the cannon feature of 10 major pieces of ordinance is of a non-ferrous nature and will not be seen with the traditional remote sensing devices employed in the past. It is hoped that with the developing EM technology currently deployed on the H-AUV *Dolores*, that many of the non-ferrous components of the NS *Atocha* will begin to be revealed.

## **7.2 INTERPRETING HUMAN BEHAVIORS FROM SCATTERED SHIPS WRECKAGE UTILIZING A “GALLEON OR SHIP TYPE MATRIX”**

### ***Nuestra Senora de Atocha, 1622 and Santa Margarita, 1622***

#### **INTERPRETING HUMAN BEHAVIORS FROM SCATTERED SHIPS WRECKAGE UTILIZING A “GALLEON OR SHIP TYPE MATRIX”**

*By James Sinclair MA, Project Archaeologist*

January 2023

It has been suggested by the Florida Keys National Marine Sanctuary that we might provide maps of the *Atocha* and *Santa Margarita* that more clearly lay out the associations of the artifacts found on these wreck sites as they relate to the Galleon Matrix model. We use this matrix both to assign possible areas of the ship from which these objects are derived and also the sorts of human behavior that would be associated with each of these areas. For readers unfamiliar with the concepts being utilized, we feel it is appropriate to first review some of the general background and concepts contained in the Galleon Matrix model.

#### ***Historic Archaeology***

The goal of historic archaeology, whether on land or underwater is the augmentation of knowledge regarding both human behaviors as well as that of extant historical data regarding a site(s), historical event, or situation. The interplay and interpretation of both static archaeological remains and historical data hopefully lets those undertaking such studies to arrive at a more accurate picture of human cultural and social interactions of the period(s) the sites were formed as well as an augmentation of the historical record from the hard (static) data obtained from studies of the site collection.

#### ***Historic Land Sites vs. Historic Shipwreck Sites***

There is a fundamental difference in shipwreck sites as opposed to those excavated and studied on land. Historic period land sites normally reveal sites with periods of habitation that range from decades to centuries, (especially true in urban centers, leading to modern times). For example, a site dug in Arlington, VA may reveal periods that span the prehistoric period, through the colonial period, the advent of the industrial revolution, up to the present day. A shipwreck site may show technologies and artifacts that existed both prior to and at the time of its sinking that are reflective of the culture and society of the period in which it operated, up to the point in time of its loss. For historic period shipwrecks time and further developments of technology, culture or society end at the time of loss.

Historic period shipwreck sites are also affected by the specific circumstances of loss. Was the ship used and then abandoned? (Mallows Bay National Marine Sanctuary as an example). Was it a casualty of armed conflict? (Pearl Harbor Shipwreck, the USS Arizona) Was it not seaworthy? (The Vasa). Or as is our case in the *Atocha* and *Margarita*, was it a victim of vicious storms. What is (or was) the environment

in which the wreckage was deposited? Was there a particular bias in the collection, i.e., was it a fishing vessel? Was it a war vessel? Was it a cargo carrying vessel? This also leads to questions of what was the cargo? What was the purpose of the cargo? Also, to be kept in mind on many vessels of the historic period there was a slant (bias) toward male crews which results in perhaps a paucity of items related to the female gender that one might encounter on a land site of a similar period. And then one must ask what are the various filtering agents that have worked on the vessel through time (see Mathewson, Muckleroy, Gibbs etc.)? What agents natural and anthropogenic have potentially affected the ships remains?

In the case of the wrecks of the 1622 fleet, that have been recovered over the past five decades by Motivation Inc. and associated companies, we are dealing with a **high energy** marine environment. These environments most often occur in shallow water, exposing the remains of the ships to wave, wind, current and tidal influences. These are also exacerbated by storm events of any magnitude, such as nor'easters, and hurricanes. Occurring in shallow waters, they are also prone to anthropogenic intrusions, most notably salvage contemporaneous or shortly after the initial loss or modern salvage efforts.

While these two shipwreck sites have produced a profound collection of artifacts reflective of the time – there are some significant absences. This will become clear in the interpretation of the artifacts that were recovered, where they were recovered, and what they can tell us about the events leading to where these artifacts were found (the wrecking process) and what these can reveal about where on the pre-wrecked ship they came from and what sorts of human behavior, cultural and social, is associated with these finds.

### **The Galleon Matrix**

While this is named the “Galleon Matrix”, with some modifications it is applicable to many/most ships of the historic period other than galleons. Galleons were a very specific type of ship utilized for a definite and finite period; however, this type of “matrix” can be adapted to many different types of vessels. The usefulness of this in dealing with the highly scattered vessels found in high energy zones like those of the *Atocha* and *Santa Margarita* is crucial.

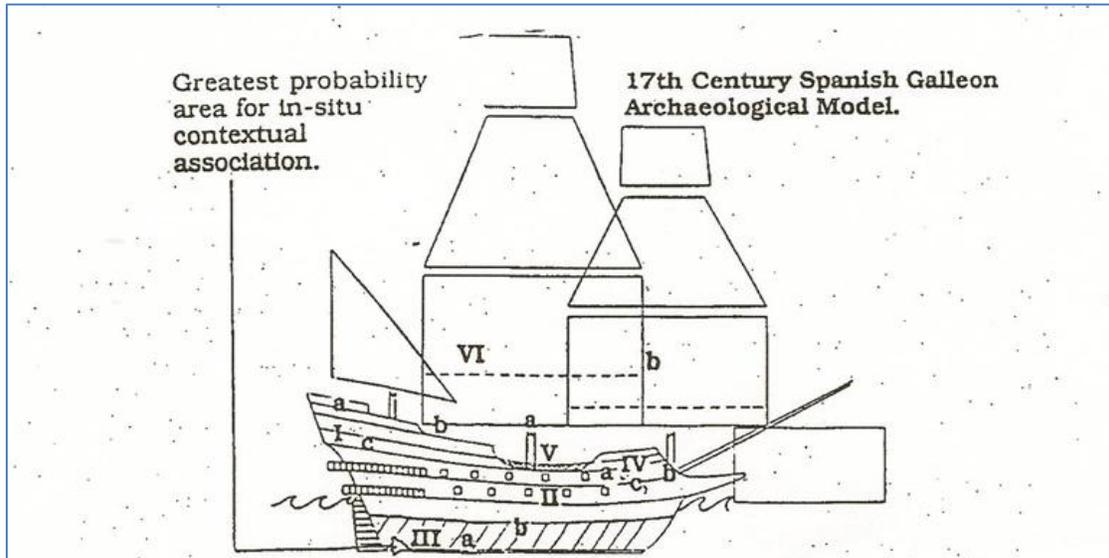
On land sites where archeologists are dealing with (normally) clear vertical stratigraphic layers on a finite area and normally within a compact area. These vertical layers on land sites are indicative of the passage of time and the associated artifacts within each layer help show both technological, social, and economic changes within the site. The stratigraphic plane on highly scattered sites occurring in high energy environments such as those that exist on the *Atocha*, and *Santa Margarita* are often on a horizontal plane. Due to the mixing and filtering and degrading mechanisms at work, the recordation of artifacts over large areas requires the adoption of a different way of interpreting these finds.

### **Activity Areas within the Galleon Matrix**

By delineating different spaces and activity areas aboard a galleon when encountering (or conversely not encountering) certain types of artifacts associated with these differing areas and activities allows us to determine, at least broadly, where on the vessel objects originated and to then deduce some of the human activities and behaviors that would have occurred in those areas and associated with those particular artifacts.

The galleon matrix (or ship matrix) breaks down a vessel into six large areas with subdivisions, and gives us broad sketches of the artifact types and human behaviors and attributes that might be expected in each of these areas:

### Galleon Matrix and activity areas



In the original Galleon Matrix, the areas were broken down into six major sections with subdivisions:

#### I. Stern Castle

- a. Poop deck
- b. Quarter Deck
- c. Ships officers and passenger's quarters

#### II. Lower Decks

#### III. Cargo Hull

- a. Bilge
- b. Orlop Deck

#### IV. Fore Castle

- a. Galley
- b. Beakhead
- c. Crews Quarters

#### V. Weather Deck

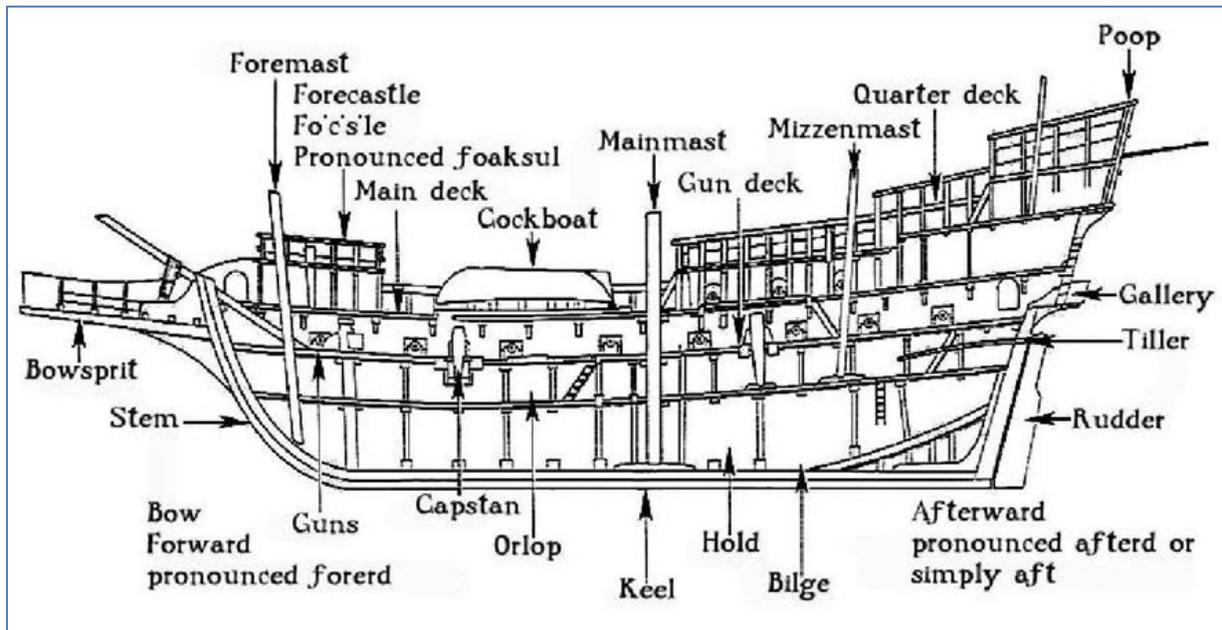
#### VI. Sail/Mast Rigging

- a. Standing Rigging
- b. Running Rigging

The Matrix then breaks down the types of material culture that is likely to be in each area of the galleon and then goes on to assign projected sorts of human behavior to each area.

<b>Galleon Matrix</b>			
<b>Activity Area</b>		<b>Matrix Artifact Assemblage</b>	<b>Behavior Patterns</b>
<b>I.</b>	<b>Stern Castle</b>		
	<b>Poop Deck</b>	Swivel Guns, Lanterns	Upper class life styles, Smuggling, Nautical Science, personal adornment, Fashions, Antiboarding defense, Aristocratic value system, Religious beliefs. Personal weapons Sword/Dagger. Grooming tools,
	<b>Quarter Deck</b>	Swivel guns, Whip saff & Tiller,	
	<b>Officer &amp; Passengers Quarters</b>	Navigational Instruments, Personal Possessions, Jewery, Gold bullion, Gold Coins, Contraband, Rapiers, Daggers, Eating Utensils, Majolica porcelain, religious Objects	
<b>II.</b>	<b>Lower Decks</b>		
	<b>Lower Decks</b>	Cannon, Gun varriages, Artillery accoutrements, Side Arm Weaponry, Crew possessions	Science and technology of ship board artillery and small arms weaponry, Lower class life styles.
<b>III.</b>	<b>Cargo Hull</b>		
	<b>Bilge</b>	Lower hull timbers, dunnage, Drift pins, Bilge pump Nails, Spikes, lead Sheathing, Musket Ball, Cannon Shot, Rock Ballast, Granel Ballast, Silver coins rudder Strap, Barrel hoops, ships refuse, Cargo items, Pintles & Gudgens, Silver Ingots copper ingots, gold bullion storage Pottery, ship's supplies sheet anchor religious objects.	Ships design and construction, shipboard armaments, Cargo storages, Rock Ballast composition and Placement, Merchantile trade, food and water storage, Ship's Supplies Nautical Science
	<b>Orlop deck</b>	Storge pottery, Ships supplies, Sheet Anchor Religious objects. Ships cables	science, crafting skills, Metal working, Numismatic trade.
<b>IV.</b>	<b>Fore castle</b>		
	<b>Gally</b>	Fire Brick, Cook Stove, Galley metal	Food preparation, Ground Tackle, Ship's supplies, Smuggling, Lower class lifestyles Religious beliefs
	<b>Beak Head</b>	Bower anchors, Cable, Figure Head,	
	<b>Crews Quarters</b>	Contraband, Knives, Bosum supplies Religious items,	
<b>V.</b>	<b>Weather Deck</b>		
	<b>Weather Deck</b>	Long Boat, grapple Anchors, Stream	Ground Tackle, Deck cargo, Ships design and construction.
<b>V.</b>	<b>Sail Rigging</b>		
	<b>Standing Rigging</b>	Mast, dead Eyes, Blocks, Sheaves, line	Ship design, and construction Science.
	<b>Running Rigging</b>	Yards, Dead eyes, Blocks, Sheaves, Line,	

Providing a more concise image of a galleon and the areas on board is helpful to illustrate the various decks aboard the galleon, however the general assignment of activity areas and types of material culture remains generally the same.



### ***Nuestra Señora de Atocha and Santa Margarita, 1622***

The *Atocha* was a 550-ton vessel with an overall length of 120 feet, and a 30-foot width. Constructed at the shipyards in Cuba under a contract to build four galleons awarded to Alonso Ferrara. The materials available for the build were different than those used in Spain. Choice in wood for the construction, as well as expense and availability of construction materials such as iron must be considered, as well as pressure to produce the ships in a timely fashion. This seems to have led to shortcuts taken by the shipwrights to the degree that after the maiden voyage to Spain, it required extensive repairs that were undertaken in Spain. The second voyage back to Spain would see the *Atocha* named the *Almirante of the 1622 Tierra Firma Fleet*. The *Santa Margarita* was a 700-ton vessel built in Bilbao, Spain while both vessels sank in the same storm the resultant deposition of the wreckage as well as the environmental characteristics are quite different.

### **The Hurricane**

In 1622, problems and weather delayed the rendezvous of the fleet from the planned date of July 1<sup>st</sup> until late in August, which was the middle of hurricane season in the Caribbean. The Tierra Firma fleet docked at Porto Bello from May 25<sup>th</sup> to July 22<sup>nd</sup>, then in Cartagena for another 8 days, arriving in Havana, Cuba on August 22<sup>nd</sup>. On September 4, 1622, the flota of twenty-eight ships, under the command of the Marques de Cadereita, sailed for Spain. Typically, to take advantage of the Gulf stream currents and to stay near land as far as possible, the standard practice was to sail north from Havana, through the Straits of Florida, around the east coast of Florida, then following the Gulf stream flow as far north as Bermuda,

then turning eastward toward Spain. It was between Cuba and Florida, only one day out of port, that the flota of 1622 encountered a hurricane. The storm, described as a rather small diameter system, moved rapidly westward across the extreme southern part of the Cay Sal Bank, scattering the 1622 fleet. Some ships foundered and capsized in the storm, however the *Atocha* and *Santa Margarita* were slammed onto the shallows and reefs of the southern Florida Keys.

Historic records show that survivors from the *Santa Margarita*, 1622, those above deck looking to their east, watched the *Atocha* strike a reef, which we now know was part of that outer (or barrier) reef line, and sink rapidly. The *Santa Margarita* deployed three anchors to hopefully stop the vessel from going into the increasingly shallow waters. This effort failed, (these three anchors were located by Treasure Salvors during a remote sensing survey in 1983). All were found set and the shanks pointing to where the *Santa Margarita* remains were located in 1980.

After the hurricane abated, the wreck of the *Atocha* was located relatively quickly by ships that had survived the initial storm, the five survivors were rescued clinging to the stump of the mizzen mast. In the storm event, the *Margarita* unlike the *Atocha* had grounded on a sandbank (Quicksands) and over the course of a few hours, was torn to pieces. Survivors of the *Margarita* sinking were found floating on wooden objects such as a hatch covers. One such survivor was *Bernal de Lugo*, a captain of the infantry on the *Margarita*, and when rescued in a longboat that happened to also be equipped with a rail mounted swivel gun, he ordered that a buoy be constructed, and the small swivel cannon used as a weight. He testified that he was marking the general area of the loss of both his ship, (the *Margarita*) and that of the Almirante, (the *Atocha*). Unfortunately, by the time that any well-equipped salvage vessels could be brought into the area from Cuba, the buoy was gone. The remains of the *Atocha* would not be found by the Spanish salvagers despite efforts that would span the next 50 years.

However, some wreckage from the *Santa Margarita* were found and the efforts to find and recover the sunken treasure were extensive. The person responsible for the expedition that successfully found the remains of the *Santa Margarita* was **Francisco Melian**. He had with him slaves capable of diving that were from both the local population of indigenous people, (known collectively as the *Matacumbes*) and divers from the pearl islands off Venezuela. Historic records show that the slave that found the *Margarita* was given his freedom.

Melian, in an effort to keep the divers working underwater on the ship's wreckage as long as possible, he constructed a crude diving bell. This device acted more like a glass held upside down in the water trapping the air in this "bell" giving the free divers more time underwater without surfacing.

Two large sections of this "diving bell" used by the salvage divers on the *Santa Margarita* were found during the early recoveries on the *Santa Margarita* site made by Treasure Salvors, Inc in the 1980's. At first, these were called bronze cauldron pieces, however, these were much too large to serve as any sort of cooking vessel aboard the *Margarita*. It is now thought that these items were most likely part of the diving bell or primitive underwater habitat that Melian had constructed. This diving bell was discarded once the *Margarita* wreckage had been found and recovered by Melian and other recovery efforts had ended.

Around the *Santa Margarita* site that was located by Treasure Salvors, Inc. in the early 1980's there were a total of 12 historic period anchors located. These were anchors used by the historic period salvage teams in their efforts to recover the treasure of the *Margarita*. All this evidence fits in well with the historic period records of the salvage done on this site. The Spanish salvors set up a camp on the

westernmost island of the “atoll like” group nearest the wreck. From this base they would work the wreck and would be visited by the *Marquis de Cadereita*. This visit prompted the renaming of the islands from which the salvagers were working to the “*Cayos del Marquis*” or today's *Marquesas Keys*.

The *Margarita* site shows the efforts of the historic period salvors and fits in quite well with the schematic flow chart that Martin Gibbs detailed in his developmental work (*Cultural Site Formation Processes: Disaster Response, Salvage and Muckleroy 30 Years on; The International Journal of Nautical Archaeology, 2006*). Expounding and expanding on ideas that were first initiated by Muckleroy in 1978, Gibbs identified several different human behaviors associated with a shipwreck that help account for a sites configuration as and when found in modern times.

### ***Atocha* Site Formation Process**

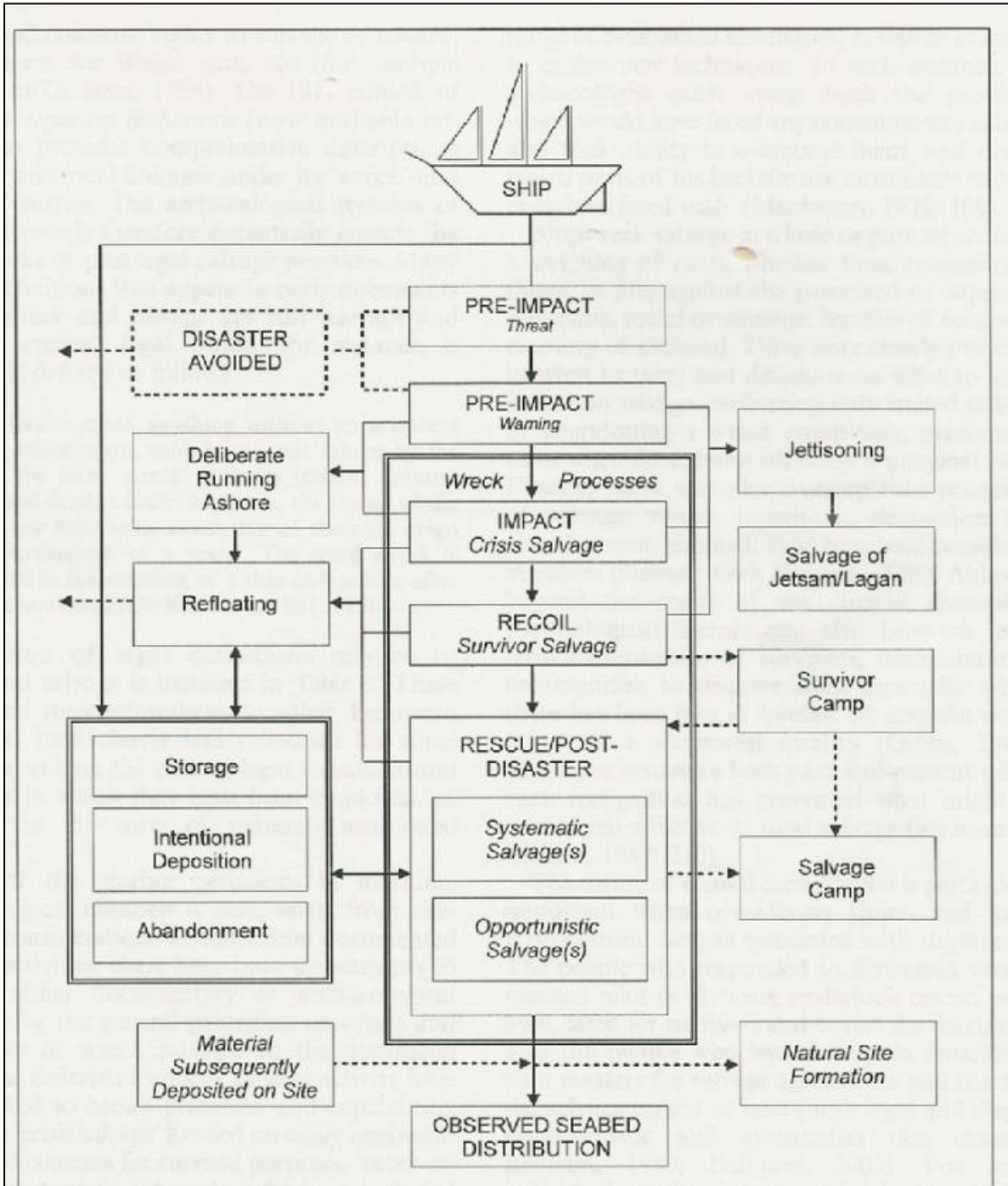
The extant historical documentation on the wrecking of the *Atocha* shows that soon after the wreck occurred, surviving vessels of the 1622 *Fleet* made attempts to locate the wreckage of the *Atocha*, the *Margarita* and other ships. Only five survivors were located from the *Atocha*, found clinging to the mizzen mast of the vessel which was still attached to the hull and protruding above the water. Records show that divers were sent down and reported that the *Atocha* was in 54ft of water. It had been holed in the bow and was leaning to the starboard side. It was impossible to for the breath holding divers to gain access to the interior as they reported that all the hatches had been battened down from the inside. They recovered one of the rail guns, buoyed the wreck and moved on to find other shipwrecks and possible survivors. Most of the wreck was then lost to the Spanish salvage teams despite nearly 50 years of attempts to find it.

### **Pre-impact/Threat Phase Evidence**

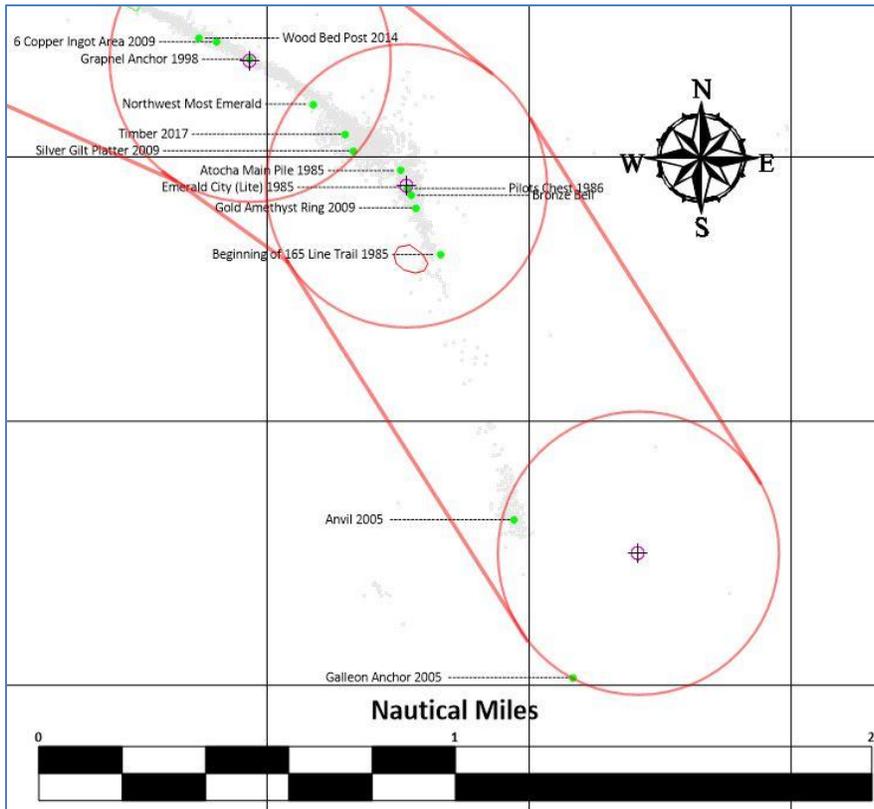
In the Gibbs Schema as detailed in the table below, the first phase of the table, “Pre impact: Threat Phase” with its concomitant behaviors is not apparent on the remains of the *Atocha* either on the primary cultural deposit (PCD) - which is clearly part of the lower hull or bilge and cargo area or in the scattered and degraded remains of the upper decks in any significant way.

However, we do have evidence of the second phase of the table the “Pre-impact: Warning phase” in a southerly direction from the PCD toward the outer reef line, in 2005, the ring and broken shank of a galleon size anchor was located. The ring and shank which evidenced that it had been set and then broke at the crown and was likely then cut away. It was oriented so that the ring and shank pointed directly to the initial sinking spot, the remains of the PCD. The anchor ring still had remnants of the cordage that was once used. Given its orientation, and condition it must be considered evidence of attempts to stop the forward momentum of the *Atocha*, or part of Gibbs’ Pre-impact threat phase. To date no trace of the crown, arms, flukes, or palms of the anchor have been found.

Martin Gibb's (2000) developing on previous work by Muckleroy, Leach and others developed a useful schematic that can be used in the interpretation of human behaviors associated with different stages in the events preceding, during and after a wrecking event that assist in exposing human behaviors during these parts of the event.



Stages	Examples of strategies, options and actions	Examples of physical and archaeological signatures/consequences
<b>Pre-impact Threat phase</b>	<p><b>Long-term</b> Collection of information on potential threats. Decisions to take/avoid routes, develop sailing instructions and seasonal restrictions Design or modification of vessels and equipment suitable to overcome potential threat Selection or training of crew</p> <p><b>Short-term</b> Changes to course, increased awareness for lookouts, preparation or stowage of equipment</p>	<p><b>Pre-depositional.</b> If strategies to avoid impact are successful, this may result in there being no archaeological evidence. Where archaeological remains do exist, these may exhibit evidence of Pre-impact strategies to diminish or negate risk.</p>
<b>Pre-impact Warning phase</b>	<p>Radical changes to course or attempts to slow, stop or turn, including dropping anchor. Jettisoning of some items. Running ashore to avoid catastrophic impact. Pre-impact abandonment possible but unlikely. Possible intervention by external sources.</p>	<p><b>Pre-depositional.</b> Effective Pre-impact behaviours may result in no arch evidence, or a debris trail of jettisoned items, but no wreck. Disposition of wreck and presence/absence of materials may be indicative of pre-impact awareness, preparedness and response.</p>
<b>Impact</b>	<p>Strategies and actions dependent upon the nature of Impact (catastrophic v. low-intensity). <b>Decision to remain aboard</b> Club-hauling (use of anchors) to pull off, or driving over obstacle. Jettisoning heavy items or cutting away masts in order to re-float or save the structure. Patching leaks until repairs can be made. <b>Decision to abandon a vessel</b> Lowering of the ship's boats or lifeboats, securing a line to shore, removal of people. Rapid selection and removal of primarily survival-oriented materials ('Crisis Salvage'). Initial post-disaster survivor landing site.</p>	<p><b>Depositional</b> If Impact is negated, the vessel may be recovered, resulting in no archaeological remains or jettisoned materials only. If unsuccessful, site may include ship's structure, cargo and human fatalities. 'Crisis Salvage'—absence of primarily survival-oriented materials, including boats from the wreck-site, or evidence of the same at land sites (easily accessible contents and cargo, fixtures and fittings). Discard of human remains resulting from post-impact mortality.</p>
<b>Recoil</b>	<p>Establishment of survivor camp Establishment of authority structure and possible re-organization of population. Organization of subsistence and rescue strategy. Further selection and removal of materials ('Survivor Salvage'), assuming that a return to the vessel is possible. Limited by available labour and equipment. Repair and re-floating.</p>	<p><b>Post-depositional</b> Establishment of survivor camp. Site structure reflecting survival strategies. 'Survivor Salvage' (cargo, fixtures, minor structural) materials absent from wreck site or located within land site. Adaptation of materials and foraging behaviour. Evidence of human fatalities may indicate unsuccessful strategies. Possible removal of vessel.</p>
<b>Rescue and Post-Disaster</b>	<p>Complete abandonment of wreck and contents. Salvage depends upon accessibility of sites and benefits versus cost, effort and time required. <b>Opportunistic salvage:</b> short duration and intensity, resulting in focus on particular types of material. Legal rights to salvage unlikely. <b>Systematic salvage:</b> over an extended period with access to increased equipment and labour, including recovery of all or part of the cargo, fixtures/fittings, minor and major structure, or complete recovery. Legal owner or agents of the wreck and materials.</p>	<p><b>Post-depositional</b> Establishment of salvage camp for storage of salvaged materials and habitation of salvage crew. Evidence of removal or non-removal of materials from wreck and land sites. Removal of vessel. Removal of cargo and fittings, through to 'Breaking' and removal of minor and major structural elements, leaving only residual elements.</p>



### Section One Map – *Atocha*

This map shows the relation of the first known evidence of the *Atocha's* sinking event, the broken galleon anchor and its position in relation to the PCD. The track of the *Atocha's* scatter clearly shows the direction of the *Atocha* to it's initial deposition on the seabed and then the effects and scattering during the second hurricane nearly a month later.

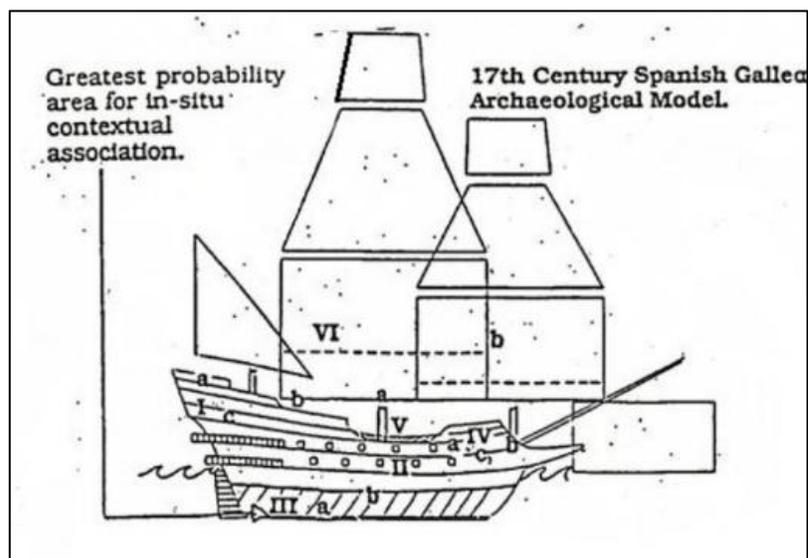
The anchor would have been in the galleon matrix model as section V, or the weather deck.

In the Gibbs schematic this is indicative of the Pre-impact Warning Phase. Disaster avoidance behaviors were undertaken.

### Bilge Cargo Area/Section III Galleon Matrix

Proceeding to the next major area of the *Atocha's* remains in a chronological order of the wrecking process is that of the Primary Cultural Deposit (PCD) or as Mel Fisher liked to call it the "Main Pile". This part of the wreck was the target of investigations by Mel Fisher and Treasure Salvors for over 16 years, until on July 20<sup>th</sup> of 1985, the teams finally located it.

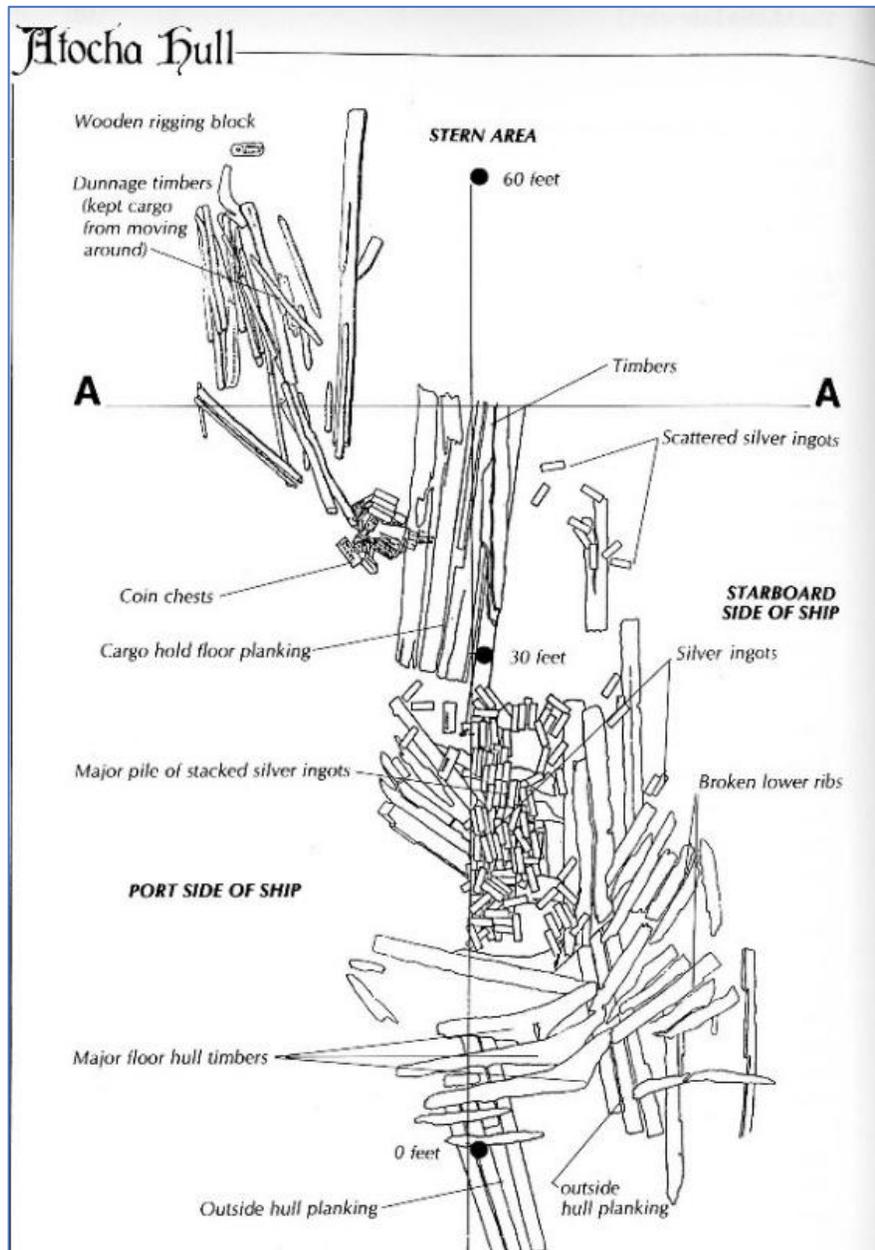
Looking at the Galleon Matrix, (Mathewson, 2000) we can see that we are dealing with a portion of the lower hull, the bilge and cargo areas delineated as **Section III**. While this area was disturbed and somewhat attenuated by the second hurricane a month after the initial sinking the arrangement of materials does give insight into the importance of cargo placement aboard this type of vessel.



This bilge/cargo area was the section of the ship where the heavy or bulk cargo was stowed.

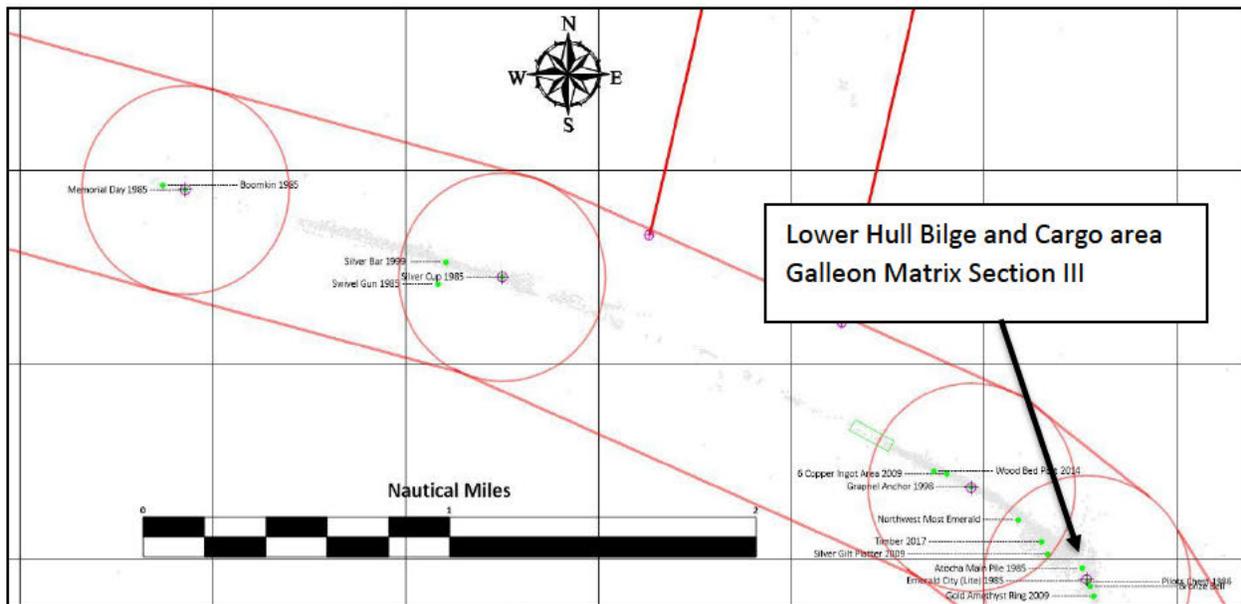
In the case of the *Atocha*, over 30 tons of silver in the form of 1280 silver bars, most weighing between 70-100 lbs. Nearly, 250,000 silver coins, tons of copper ingots, boxes of silver plate, some personal cargo belonging to officers, crew and passengers and 80 tons of the important ballast. All was carefully packed into the lower hull to allow the ship to sail on an even keel. To keep the cargo and ballast from shifting, the lading of ballast was of great importance. Along with all of the cargo and ballast there was also dunnage, which were various minimally worked pieces of wood that were meant to wedge in these heavy items to keep any shifting to a minimum.

In reviewing the site plan of the *Atocha's* PCD it is evident that little in the way of wooden hull remained. Only 13% of the lower hull that survived was trapped under the enormous weight of ballast and heavy cargo. There is clear evidence of the compression or collapsing together of the major floor timbers, these were compressed together as the upper decks, as well as the keel and keelson - under the pressure of the waves, currents, and tidal influences of the second hurricane a month after the initial sinking were ripped away and driven northwesterly, away from the lower hull section.



Site plan of *Atocha* PCD

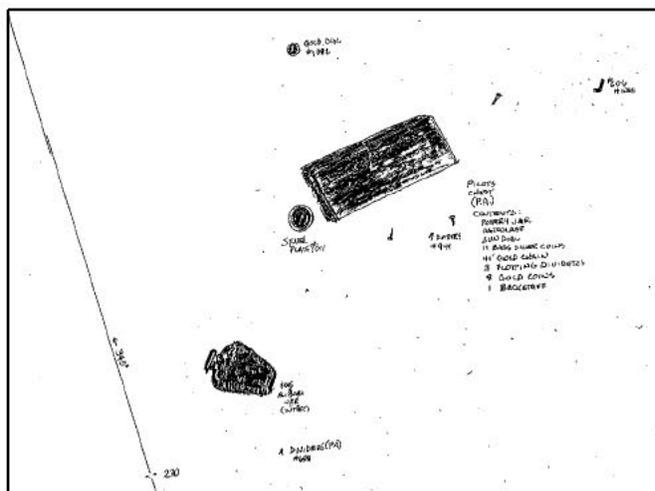
**PCD to Memorial Day Find**



Objects of special note in the beginning stages of this deposition were two large tinaja's or ceramic storage vessels that the Treasure Salvors recovery crew at the time referred to as "Ali Baba" jars in homage to the character and story line of "1001 Arabian Nights". Likely used for storage of water below deck these were amazingly intact despite the violence of the event.



Another unique find was referred to as the "Pilots Chest". This crate contained an astrolabe and a wooden backstaff with degrees marked on it. A pottery vessel, an ivory compass sundial, 3 pairs of dividers used for plotting. There was over 40 feet of gold chain and 11 "bags" of silver coins and 8 gold coins. Giving insight into the personal wealth and important objects of a specific individual, Martin Jimenez, the Pilot of the *Atocha*.



*Pilots Chest and Ali Baba Jar*

As the vessel was torn apart in the second hurricane the superstructure or upper decks became relatively more buoyant now moving in a Northwesterly direction, some materials began to be lost deposited along this trail. Not far from the PCD in a North-Northwesterly direction is the area that would become known as "Emerald City" for the thousands of uncut Colombian emeralds recovered. Also, at the beginning of this scatter trail was a silver gilt platter and copper ingots that were still spilling out of the broken lower hull. It should be noted that no emeralds were

listed on the *Atocha's* official manifest, so this area associated with the lower hull or Section III of the Galleon Matrix certainly gives us insight into human behavior not only the important placement of the ballast and cargo, but also into the more personal decision to smuggle unregistered treasures back to Spain.

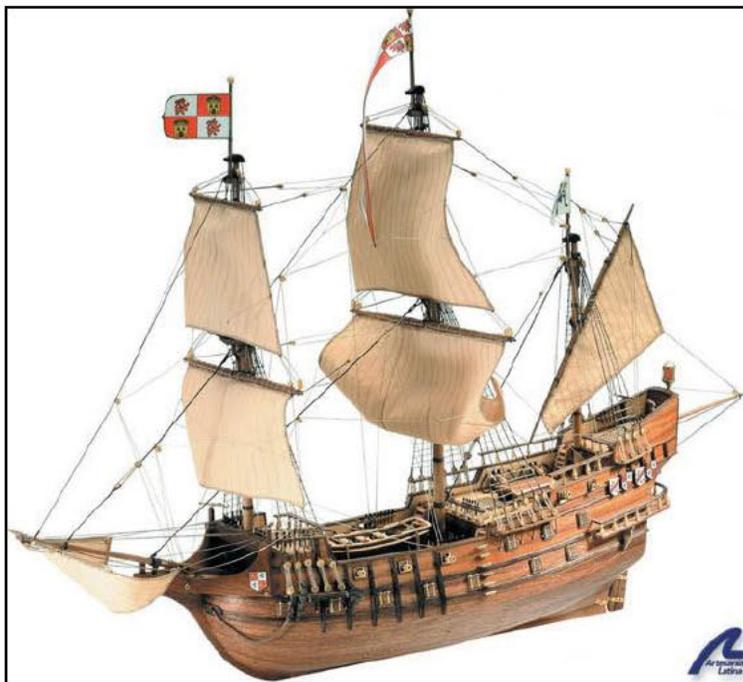
### Upper Decks/ Stern and Gundeck, Galleon Matrix Sections I, II & IV

At this Juncture of the wrecking process, the evidence of scatter becomes much more attenuated and sporadic on this Northwesterly trail. The next significant evidence is what became known as the "Memorial Day" finds. This was a collection of jewelry and gold bars that had been ejected from the remaining structure of the *Atocha*. Near this area was some of the first evidence of structural remains that had been found in the 16 years of search and recoveries before the main pile was located. This was a section of a backstay, known as a boomkin.



*Memorial Day finds*

The boomkin is indicative of a part of the stern passing through this area and perhaps a chest of personal treasures associated with the stern section being lost or ejected at this juncture. Looking back to the Galleon Matrix, the boomkin is technically a part of the Sail Plan, which illuminates some of the dynamics of the sailing of such a vessel, relating to both construction techniques and

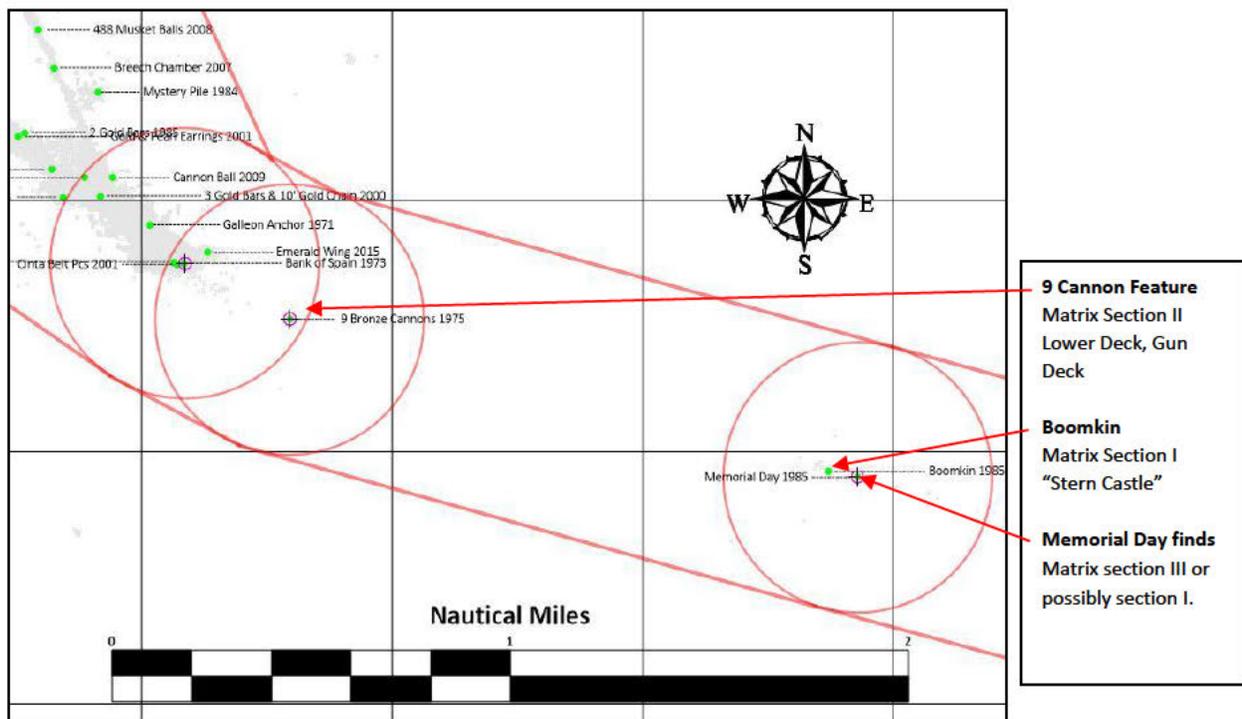


*The Boomkin or backstay can clearly be seen on the stern of this model of the Atocha.*

*Boomkin*

and navigational science. These would relate back to the Galleon Matrix as sections I and VI. The chest, if indeed it was ejected from the stern of the vessel would then be associated with aristocratic lifestyles and that strata of Spanish Colonial lifeways.

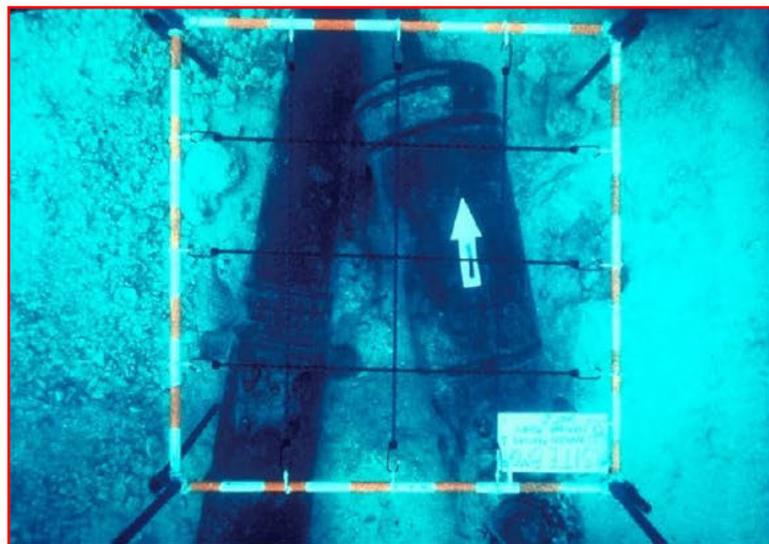
## Cannon Feature and the Coral Plateau Galleon Matrix Sections I, II and III



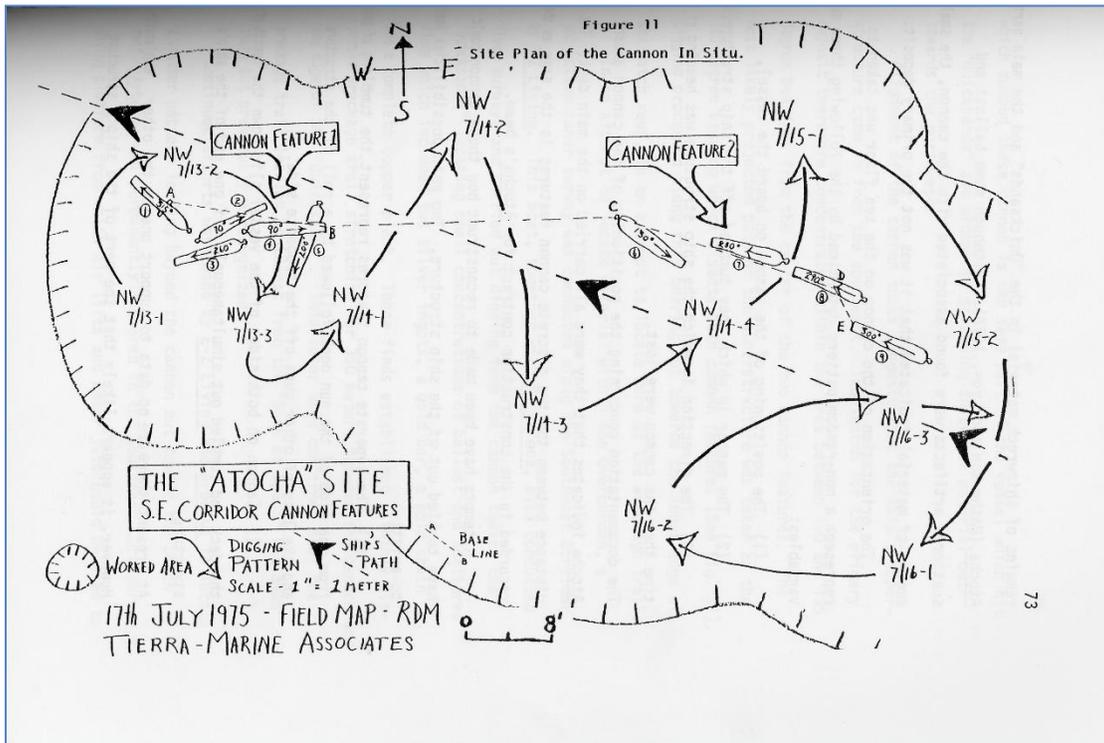
*Memorial Day Find to 9 Bronze Cannon 1*

The next deposition in the proceeding chronological breakup that the hull remains of the *Atocha* would make is the cannon feature found in 1975, this feature was 9 bronze cannons in two distinct groupings, one of 5 and one of 4.

These two groups were separated by 30 feet, the width of the *Atocha's* hull. The *Atocha's* hull remains had been pushed along the area of the Florida Keys seabed known in modern times as the "Hawks Channel" this is a relatively flat mud and sand area in 40+ feet of water. The cannon feature appears at the south edge of a rise out of the Hawks Channel, that the crews called the "Coral Plateau" actually a carbonate rise in the sub bottom with no live coral formations. This was a barrier to the forward motion of the *Atocha's* remains.



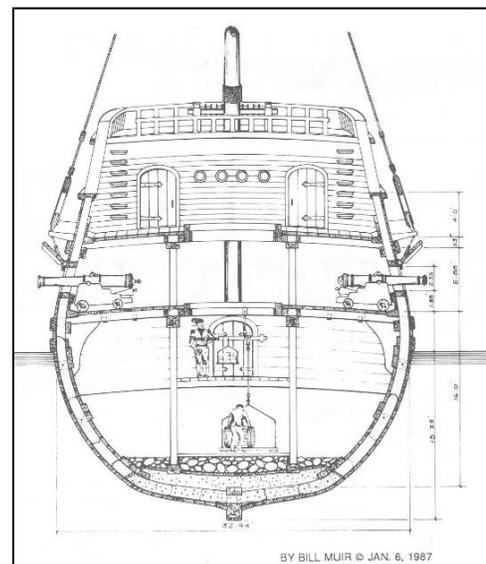
Here the wave action of the second hurricane would have battered the hull structure and likely in a violent rocking ejected the cannon from both the starboard and port sides of the wreck.

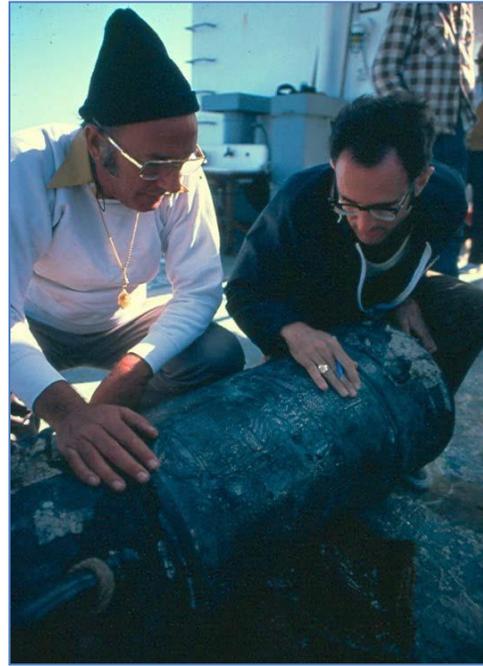


Atocha 9 Cannon Feature 1

The cannon find was of prime importance as the search for the *Atocha*'s PCD was going forward, as they were very compelling pieces of evidence that led Chief Archaeologist Duncan Mathewson to come up with what he called the "deep-water theory", which would in 1985 prove to be correct. Unfortunately, at the time other finds indicated that intrinsically valuable material was northward from this find and the impetus of the salvage teams and other conflicting theories pointed toward the north.

The gun deck can be viewed through the "Galleon Matrix" Activity area Number II as the site of many sorts of human behaviors. The efforts to protect the ship and/or take offensive action against an enemy were centered here. Gun crews trained long and hard to be able to move, load, aim and fire these massive pieces of artillery. But much more than this took place along this deck. Much of the crew and the soldiers that were on-board the *Atocha* were most likely housed along this deck, food was served to the various watches on this deck, sleeping and socializing among the crew also took place along here. While a whole host of human behaviors are potentially represented on this deck the cannon area yielded little else aside from the cannon themselves. The *Atocha* now minus the weight of much of the ballast and now the loss of the nine-bronze cannon became light enough to be forced up and over the "Coral Plateau" area.





*Mel Fisher & Eugene Lyon identify Atocha bronze gun #2499*



*Part of the gold cinta or belt, "coral plateau" area*

Across the Coral Plateau area, the first three silver bars, with various markings that could be matched with the manifest of the *Atocha* were found in the 1975/1976 on this Plateau. Once again seemingly reinforcing the theory that the wreck lay to the North. In 1984 another team searching the plateau area would find a spectacular set of jewelry the "Cinta" or belt was 20 pieces of high carat gold set with alternating diamonds, rubies, and pearls as well as a heavy gold chain.

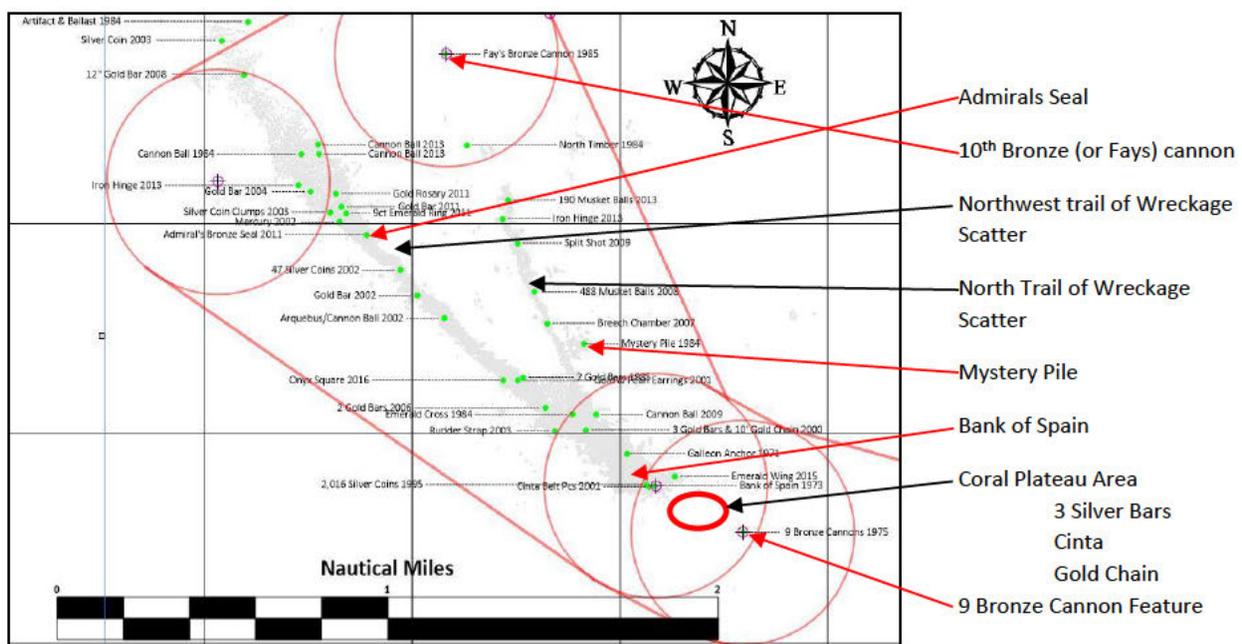
As evidence has built over the years, we can see that we have what appears to be material from the lower hull, (silver bars) as well as high value and high-status material (gold chain and jewelry) possibly from the upper deck stern area. It is now thought that, much like the Memorial Day finds that we have two possibilities, one is that in the ongoing breakup of the wreckage, part of the lower hull was pulled along with some of the silver bars and deposited on the plateau area at or near close to the same time a small box containing the jewelry and chain was dislodged. The events that led to the deposition of these silver bars and jewelry items took place not long after the *Atocha* had disgorged the 9 bronze cannons. It is not difficult to imagine that the upper decking was also deteriorating, and possibly depositing some of the high value material from high status passenger's accommodations there. There is also the possibility that this jewelry and chain were all part of one crate or package that was in that part of the lower hull, much like the pilot's chest.

## The Quicksands and the Bank of Spain

Northwesterly from the “Coral Plateau” the battered and broken remains of the *Atocha* encountered it’s next hydrological barrier, the “Quicksands”.

As the wreckage of the *Atocha* spilled the silver bars and the jewelry across the coral plateau it was headed toward an area of deep shifting sands that are known collectively as the “Quicksands.” This area consists of what are literally desert like sand dunes extending over a large area of sea bottom that shift over time, dependent upon current and seasonal storm intensities.

It was in this area that the hulk of the *Atocha* impacted on the south leading edge of the sand bars and began a more substantial breakup. Between the storm surge and hurricane currents the *Atocha*’s already badly compromised hull structure cracked like an egg and separated into at least two sections. The initial spill from this event scattered a host of varied artifacts. One of the first to be found by the Treasure Salvors Teams was a galleon anchor in 1971. Close by this anchor thousands of silver coins would begin to be located, so many in fact that the divers at the time dubbed the area the “Bank of Spain”.



In viewing the map one can see that there seems to be two distinct lines of dispersal one is referred to as the Northern track, this included what was known as the “Mystery pile”, now thought to be a ballast spill from a section of the lower hull still carrying a substantial amount of ballast.

These two areas appear to represent two distinct area related to the Galleon Matrix. If indeed the Mystery Pile is part of the lower hull, then we are dealing with Roman numeral III or the Bilge and Cargo area. The current thinking is that this was attached to what was left of the Bow and forecastle section of the *Atocha*, further north along this line is an area where a “breech chamber” was located. These were the preloaded chambers used in the swivel or rail guns. There was also nearly 500 musket shot recovered

and some carpenters' tools. Further north along this line the 10<sup>th</sup> Bronze cannon (Fay's cannon) was located and north from that two more galleon anchors.

All this material fits in well with galleon matrix areas that is numbered as II, III, IV and V. These include the Forecastle, Lower Decks (specifically the Gun Deck) and the Weather Deck. These include the beakhead, the galley, more crews' quarters and part of the gun deck. The cannon along with the two anchors are indicative of a large piece of wreckage still traveling north along this track.

On the Northwesterly trail, there are some very distinct and high value items being lost from the section of the *Atocha* wreckage that was moving in that direction. The "Bishops Cross" at the southern end of this trail is one of the iconic artifacts recovered from the *Atocha*. At the Northern End, we recovered the Admirals Seal. This is a very important and personal item representing Admiral Pasquier's position not only aboard the *Atocha* but his social standing. Used to seal documents with sealing wax, it was both a signature and a guarantee that the document so sealed was from that individual and therefore vested with his power and authority. Moving further north along this track there are yet more valuables in the form of gold bars and more silver coins, in 1983 according to our records ballast was found. Once again indicative that even though the high value materials were likely coming out of the Stern section (Section III of the Galleon Matrix), in specific the cabin that belonged to the highest ranking officer aboard the *Atocha*, the Admiral *Don Pedro Pasquier de Esparza*.

Traveling further northwesterly along this track high value objects are still found and at the northern reaches of the trail of wreckage, ballast was still being recovered. This would seem to indicate that there was still some vestige of the lower hull attached to the section of wreckage that was losing the high value objects along the Northwesterly track.

At both the Northern extremities of both the North and the Northwesterly trails of wreckage we have investigated so far there is evidence that substantial pieces of wreckage were still moving through these areas, the presence of the 10<sup>th</sup> Bronze Cannon and anchors on the extreme north end of the "North track" and the presence of both high value objects as well as ballast at the north end of the Northwesterly track" speak to this phenomenon.

Objects still unaccounted for listed on the *Atocha's* official Manifest:

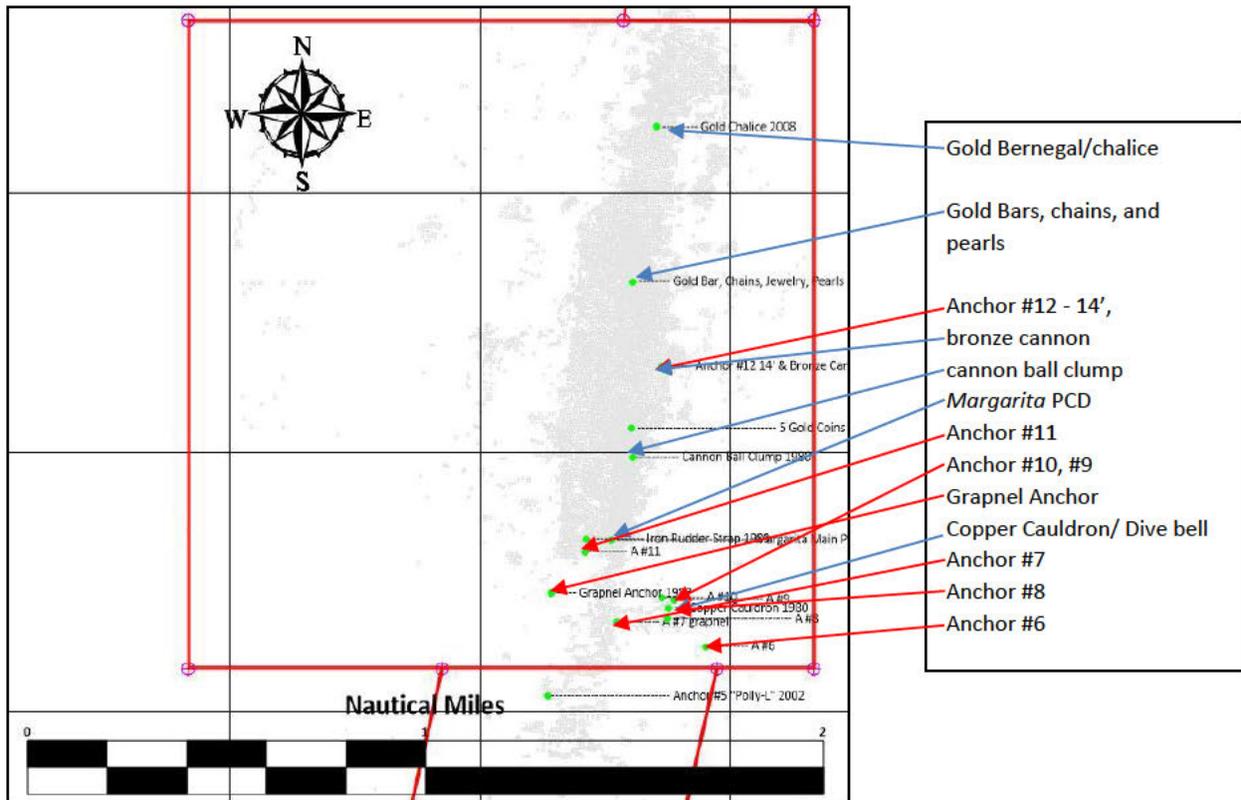
- 10 Bronze Cannons
- 4 Tons of Cannon Balls
- 264 Silver Bars
- 45,000 – 65,000 Silver Coins
- 111 Gold Bars / Disks
- 140 Copper Ingots
- 60+ lbs. Rough Colombian Emeralds
- An untold number of other artifacts and smuggled items

Since there are still substantial materials that have yet to be found these northern most finds along both tracks of scatter likely indicate directions of potential dispersal that need more investigation.

### **The Santa Margarita**

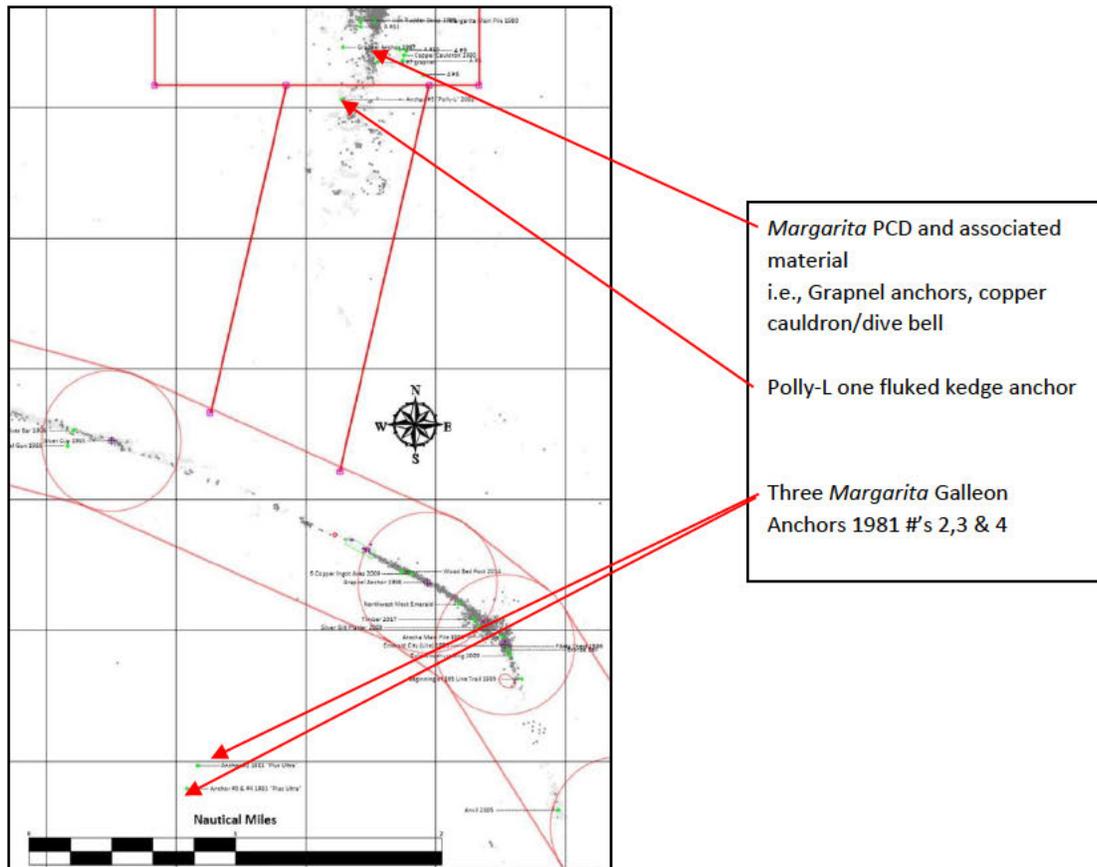
The *Santa Margarita*, is different than the *Atocha* in a number of ways even though they were both victims of the same hurricane event. Whereas the *Atocha* sank in “deeper water” i.e., 55 feet and remained in a relatively intact condition until the second hurricane a month afterwards. The *Santa Margarita* was forced into the shallows and over a number of hours was broken asunder by the hydraulic forces of the first storm. The apparent major scatter of the wreckage falls along approximately 11° line.

The primary area of the *Santa Margarita* was located in April of 1980 when a host of valuable objects were found. Subsequently, a portion of the hull structure was also located that represented a portion of the starboard stern upper hull. Over the next three years significant work inclusive of excavation was conducted around the initial finds area and northward in a relatively wide swath. Around the initial area a number of smaller anchors were found as well as what was first termed as two sections of very large diameter copper/bronze cauldrons at the time (1980) salvagers assumed these were all parts of the equipment on the *Santa Margarita* and some may well have been, (as with the one fluke anchor and chain found to the South by the Polly-L). However, as the years have passed, it has become clear that at least some of the number of these smaller anchors, including the two grapnel anchors found around the “main pile” of the *Margarita* are associated with historic period salvage efforts that were conducted by Spanish Salvors over a period of 50 years.



*Margarita PCD area and 11° line*

Historic Records indicate that survivors from the *Santa Margarita* watched the *Atocha*, strike the outer reef line and sink very quickly. The *Margarita* crew, in an effort to save themselves, the ship as well as the treasure onboard, deployed a number of anchors, which all failed to hold the ship against the forces of the storm. These three anchors were found in 1981 during a magnetometer search. These, at the time found, all retained part of their wooden stocks and were set, with the anchor rings extended. All three anchors line up closely with the 11° line of what is considered the main scatter of *Margarita* material.



The southernmost *Margarita* anchors #3 & #4 were likely the bower anchors and another auxiliary anchor deployed as the first two were failing. These items would have come from Section IV and V or the Galleon Matrix. In this area we can also see evidence of the “Pre-impact Warning Phase - actions” that Gibb’s identifies in his schematic. Attempts to save the vessel were futile, although the single fluked anchor to the south of the main area of *Margarita* wreckage may well be indicative of another attempt to halt the forward motion of the ship as it was being driven further into the shallows.

The attempts to save the *Margarita* were futile, however, unlike the *Atocha*, the *Margarita*’s wreckage was located and a series of recovery efforts by Spanish agencies out of Cuba were undertaken these would take place between 1623 up through 1679.

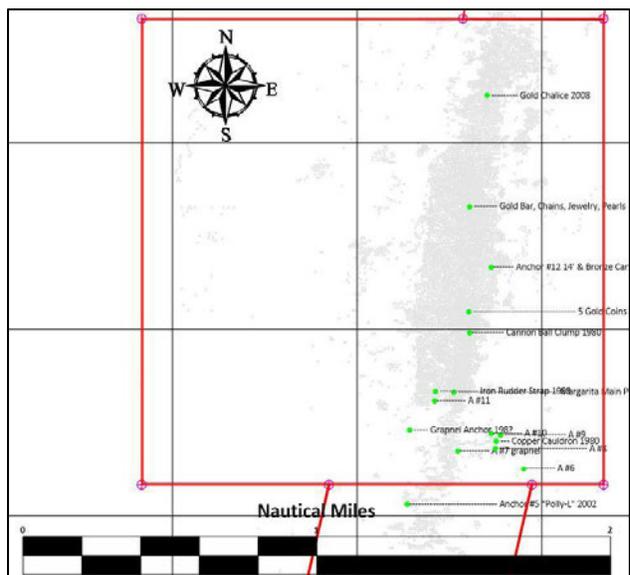
Of great interest is the Melian Salvage of the *Santa Margarita* and his futile attempts to find the *Atocha*, however, he did come up with a unique piece of equipment to salvage the wreckage.

**AGI - Escribania De Camera 1022 B. - Petition presented before the Consejo de Indias in 1627:**

*“because heavy seas and the cold water has held up the search for the Almiranta, it was decided that some better equipment would be needed for the divers to locate the Almiranta, Francisco Nunez de Melian had a diving bell made to facilitate the work. It was four and a half palmos [a palmos is 8 to 9 inches, Horner says 8.27 inches] in diameter [34-38 inches, or according to Horner: 37.185 inches] at the bottom, six palmos high [48-54 inches, or according to Horner 49.62 inches], weighed 700 pounds, with aassas” (handles?) on each of its sides on the outside of the bell, with extra pieces of iron bar affixed to aid in the*

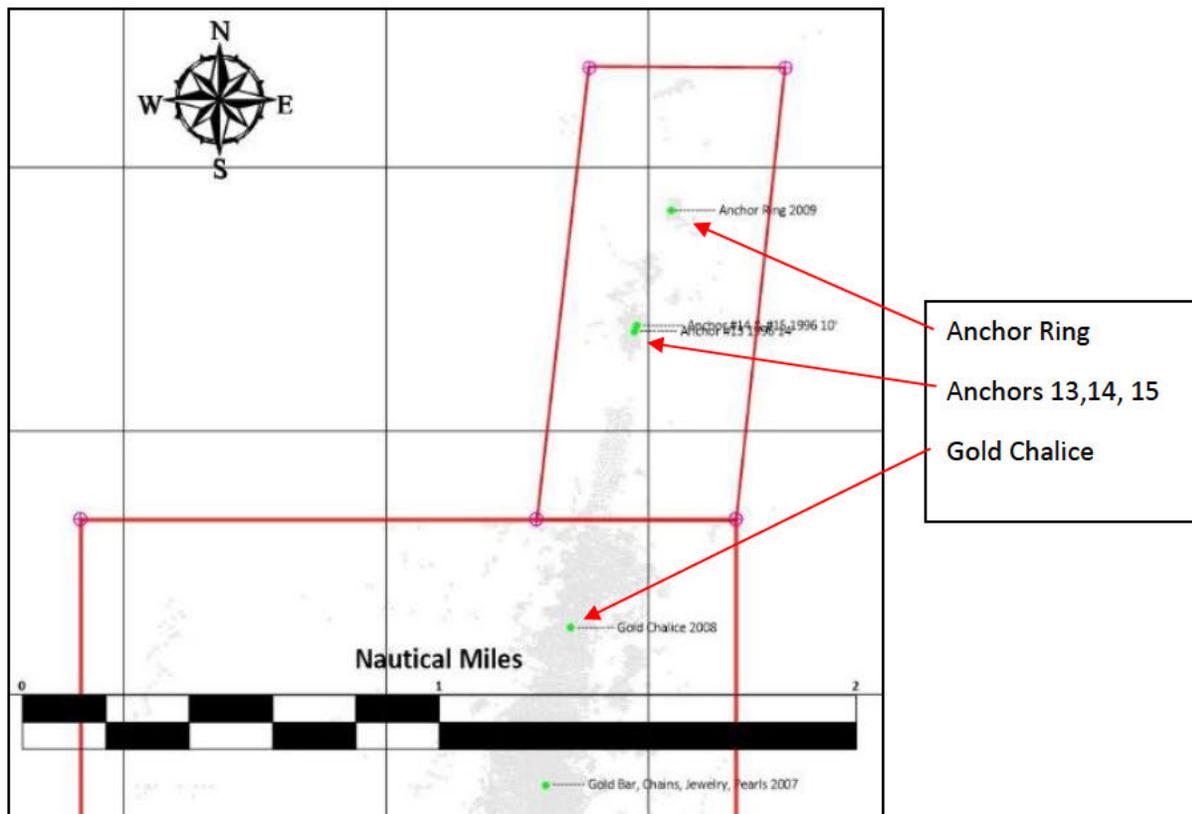
**sinking of the bell.** Divers can sit inside the bell and get a breath and then swim out again and work. When on the bottom half the of the bell is filled with water and the other half is filled with air... With one patache, one frigate, one bergantine [sic] and one barcolongo [longboat] Melian, one scribe and one chaplain and others, left Havana on 8<sup>th</sup> of May, crossing the Bahama Canal and arriving at the cays on the 11<sup>th</sup> of May and it took a day to occupy the last cay which is named Marques, where ashore they built a house ashore for safety against the Indians. Then they re-embarked and from the mast tops of the boats they went in search of the buoys which had been placed on the wrecks some time before. But they could not find the buoys, so they started dragging with a rope cable 200 fathoms [1200 feet] long. For 27 days they continued the dragging, occasionally snagging things which the divers would go down to investigate. Not until Wednesday on the 3<sup>rd</sup> of June did they finally find something. Three divers went down, one finding and iron hoop, another an ingot of copper, and the other a silver bar. Then they realized they had **discovered the Margarita** and the divers worked on her until the 10 of June”.

While this does not specify the material the **diving bell** was made from, the likelihood is that it was made of material readily available in Cuba, (i.e., copper). Wood would be too buoyant, even with the extra **iron bars**, used for weight. The presence of colonial period salvagers as evidenced by the grapnel and other small anchors and the copper “**dive bell**” parts along with the **bundles of iron** that were also recovered in the early 1980s near where the “copper cauldron”/ diving bell pieces were located to add weight for sinking are compelling and unique remnants of this past activity. The fact that Melian, would leave these behind after his successful salvage is not unsurprising and likely would have been used in subsequent salvage efforts after the Melian expeditions, but in the end abandoned in favor of more valuable objects.



The wrecking event of the *Margarita* is quite different than that of the *Atocha*. After losing the three anchors to the South-southwest the *Margarita* was finally pushed into a shallow and grounded. There it was beaten by the hurricane force waves until it came to pieces. This is reflected in the movement of material along the 11° line up to the northern part of the scatter where anchors #13, #14, #15 were found, further north part of an anchor ring was found.

These are significant and heavy objects and were being carried by part(s) of the wreckage still moving in that direction.



Northern track of Margarita scatter

The evidence recovered from the seabed as well as that of historical documentation from the archival sources both serve to confirm that the *Margarita* wreckage and the main axis of the larger objects was a product of the first storm. The evidence is clear that the second storm also had a significant impact on the wreckage. This can be plainly seen in the extent of scatter that leads Northwesterly, away from the PCD of the *Margarita*. This was also confirmed in the historical record, as some of the salvager's report that divers had located another "pile/mound" to the East, that contained silver bars and coins and ballast.

The seabed evidence from the *Margarita* collected since 1980 as well as the archival sources line up well with the Gibb's schematic, under his headings of:

**Pre-impact warning phase**, having watched the *Atocha* sink quickly, those on the *Margarita* deployed 3 anchors, the lines of which parted and quite possibly in a last attempt also deployed the one fluked kedge anchor found by the Polly-L.

**Impact:** we know from the archival records that vessels that survived the storm returned to the area and rescued survivors, that Bernal de Lugo, from the *Margarita* was rescued from a floating hatch cover and commanded that a spar buoy be made and left to mark the general area that he said both the *Margarita* and the *Atocha* were lost.

**Recoil:** while there were attempts to recover treasure from the *Atocha* when it was first located and the five survivors were rescued, the depth was such that divers could not effectively work the wreck, a small cannon (rail gun) was recovered, and the site buoyed so that better equipped salvage teams could return and recover the treasure.

**Rescue and Post -Disaster:** All rescue had been completed on the *Atocha* and *Santa Margarita* soon after the storm abated. Systematic salvage was undertaken by well-equipped salvage teams off and on for the next 50 years. These efforts are evident from archival data as well as the site itself.

## Conclusions

This report and maps associated with it are the result of a request from Mathew Lawrence, the Underwater Archaeologist for the Florida Keys National Marine Sanctuary. We at Motivation Inc. believe it was an interesting exercise.

Perhaps it is a function of the long duration of the principle's involvement in the recovery, conservation, and interpretation of these two great shipwrecks, that perhaps we take for granted. That in the many years of past report submissions, that the "Galleon Matrix" and its significance to the interpretation of artifacts recovered over these highly dispersed and the ongoing and the constant in-situ deterioration of the artifacts of these shipwrecks was clear. However, that not being the case, we submit this addition to this current submission.

It did allow for perhaps a more clearly visualized idea of the scattered nature of the shipwrecks, the various areas aboard the pre-wrecked vessels associated with our recoveries. As well as a better look at the evidence of historic period salvage activities undertaken on the *Santa Margarita*. The sections of the "diving bell" previously recorded as copper cauldron, the bundles of iron bars recovered nearby used as counterweights for the diving bell, the numerous smaller anchors used by salvage craft around the currently known main area of the *Santa Margarita* all speak to the efforts undertaken to recover the treasures in the years and decades following the initial sinking in 1622.

Utilizing both the Galleon Matrix and the Gibbs schematics, a fairly robust view of the activities on both the *Santa Margarita* and to a lesser extent the *Atocha* can be derived.

Our next work will be aimed at utilizing the current database and creating other field (s) that will incorporate some of the Galleon Matrix identities associated with artifacts, as well as, to the degree possible, human behaviors associated with them. Whether they represent macroeconomics as in shipments of coin and bullion bars, or at the personal level, smuggled goods and/or religious objects that speak to the both the greed and or the hope of salvation.

It is an ambitious step and likely will need much in the way of adjustment as more is understood regarding these shipwrecks.

## 8 HISTORICAL RESULTS AND CONCLUSIONS

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1. *The description of the results and conclusions of the historical, architectural, engineering or cultural resource investigations shall address findings in relation to the stated objectives;*

The *Nuestra Senora de Atocha* and the *Santa Margarita* have revealed much of the lifeways, and society that was present at this period in the Spanish Colonies of what is today Latin America. The nearly unbelievable opulence and wealth of the upper classes, officers, dignitaries, lesser members of noble houses and powerful clergy is well represented in the magnificent jewelry, the heavy gold chain, and the silver bar consignments that we know to have belonged to a single family.

The items found that were unregistered, give us a chance to speculate on the pervasive nature of contraband at nearly every level of society. Historical documentation of the building of the *Atocha* has given insight into the contractual arrangements between the crown and the builder in Havana, as well as revealing places in the remnant structure found at the Primary Cultural deposit that showed where the contractor had “cut corners” in the build, thereby making the overall structure weaker. We can only conjecture as to whether the vessel had been built according to what the contract called for perhaps it would not have sunk so quickly after striking the outer reef.

2. *An assessment of the integrity of evaluated sites;*

While this has been covered at some length in the various documents, it is worth noting again. That while the *Atocha* and the *Santa Margarita* represent homogenous collections of 17<sup>th</sup> Century Spanish Colonial material, and hold undeniable historical and cultural value, these sites are highly scattered and dispersed. They exhibit often discontinuous multiple tracks of wreckage due to both the initial sinking, the hundreds of years of subsequent storms, ongoing in-situ deterioration and in the case of the *Santa Margarita*, anthropogenic effects of salvage soon after the sinking. As with many sites of this period in warm, shallow water high energy zones there has been much lost due to the action of the environment on the remnant components depending on each object’s material makeup.

Also, it is generally acknowledged that ships of this time period were slanted towards traditional male gender roles, so there is often little represented in the archaeological record from these two vessels that can be pinpointed to the female gender. In this regard while shipwrecks have been often called a time capsule, it may be more correct to say that shipwrecks that occur in warm shallow water high energy zones represent a naturally slanted or skewed picture of shipboard maritime culture and activities that have been winnowed by both natural and often anthropogenic events.

3. *Methods used to apply National Register criteria for a determination of eligibility and historic context;*

Since both sites were awarded to Motivation, Inc., and its predecessor companies in the US District Court for the Southern District of Florida, in Admiralty, these sites are not eligible for the National Register of Historic Places. Further, by the definitions for eligibility on the National Register of Historic Places neither of these sites would be eligible as they do not fit many of the criteria themselves.

4. *A description of the constituent elements that constitute the complete property (e.g., outbuildings, landscape features, etc.) which is determined eligible for listing in the National Register;*

This is not applicable to the *Atocha* and *Margarita* shipwrecks. See Section #3 above.

5. *The National Register property boundaries depicted on a scaled site plan sketch;*

This is not applicable to the *Atocha* and *Margarita* shipwrecks. See Section #3 above.

6. *Conclusions and analysis of the findings;*

While many archaeological, cultural, and sociological conclusions can be drawn from the collections from the *Atocha* and the *Margarita*, perhaps one of the most compelling is the fact that good historical and archaeological data can be garnered from sites worked by private sector interests such as Motivation, Inc. That in the five decades that these sites have been worked much has changed regarding our understanding of both shipwrecks, conservation, preservation, and the various methods that historic resources can be utilized and preserved. The *Atocha* and the *Santa Margarita* are arguably the best-known Spanish Galleons of the modern period. This was due to the efforts of Mel Fisher and his companies. Museums around the world are caretakers of parts of the collection, as well as the permanent collection in Sebastian, Florida at the Mel Fisher Center Treasure Museum and in Key West, Florida at the Mel Fisher Maritime Heritage Society Museum. For more detailed reports on finds from the *Atocha* and *Margarita*, please refer to previous reports, the attached bibliography and our growing online publications located on our web site at [www.melfisher.com](http://www.melfisher.com) under the "Research" tab.

7. *A discussion of the manner in which the resources contribute to an understanding of local, regional, state, or national history and/or architectural history and recommendations regarding the treatment of the resource(s) including but not limited to preservation or avoidance, minimization or mitigation of potential impacts, or no action;*

The investigations of these shipwrecks, the recovery of the remains and further ongoing studies are supported by Motivation Inc. under both Federal Court orders and long-standing permitting / certification from the FKNMS.

The various understandings that have been generated as to history whether local, State, regional or national are well documented in both the individual report as well as books, magazine articles, video

and TV documentaries, and now on-line at [www.melfisher.com](http://www.melfisher.com). However, the impact of the recoveries from the *Nuestra Senora de Atocha* and *Santa Margarita* are ongoing.

On a local level, the tourist industry in Key West certainly benefits from both past and ongoing recoveries in various ways. In the first year following the discovery of the Primary Cultural Deposit of the *Atocha*, the exhibit received over 800,000 visitors. The permanent Collection of the *Atocha* and *Santa Margarita* held by the non-profit 501C3 Mel Fisher Maritime Heritage Society as well as the privately-owned museum exhibits at the Mel Fisher Center Treasure Museum in Sebastian, Florida not only supports educational outreach regarding these two shipwrecks but with respect to the Mel Fisher Maritime Heritage Society, undertakes archaeological projects both at the local and international levels. The investigations will continue, studies will continue and our understanding of these great shipwrecks and the societies and cultures that produced and influenced them will grow.

8. *A discussion of the scope and completeness of the project efforts and the need for any additional identification, evaluation, or documentation efforts;*

The scope of this project is amazing in both size and duration. Few other underwater archaeology projects can come close. Admittedly at one level, it is about the intrinsic value of materials recovered - but it has evolved into so much more. From the individual passions of the talented people who have spent their lives and careers on these projects to our investors who believe in us and to the unending interest of the public to come and be awed by the treasures and in the process learn about the Spanish interactions in the New World. Is the project complete, no. Under the orders of the District Court for the Southern District of Florida, in Admiralty, we continue to recover, both the artifacts and the stories of these incredible ships.

Documentation of the project has evolved over the course of the fifty years of work undertaken, and will, no doubt, continue to evolve.

Three generations of the Fisher Family have worked on these projects. Early leaders have passed, but the efforts to find, recover and preserve these lost artifacts will continue to be the goal of the work undertaken.

It is our hope that as the years pass that the relationship that we have established with the FKNMS and NOAA will always remain congenial and collegial. There are many examples today of private sector working with the public sector to achieve the goals of both entities. If Bezos, Branson and Musk can work with NASA in bringing science and yes passengers to outer space, we may certainly hope that the long standing, and we feel unfounded, adversarial stances taken by some individuals and professional organizations can be overcome. And like these other entrepreneurs we may find a path to both greater discoveries and a more conjoined and cooperative relationship on many such projects in the future.

9. *The location of all curated project records and location of all project records (e.g. photographs, oral interviews, etc.); and a bibliography of those sources used.*

All project records are held by Motivation Inc., the Mel Fisher Maritime Heritage Society and in reports submitted to the Florida Keys National Marine Sanctuary.

## 9 FLORIDA MASTER SITE FILE (FMSF) REQUIREMENTS PER FKNMS

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At the request of the Florida Keys National Marine Sanctuary, and in an effort by Motivation, Inc. to help streamline the report review process and to be consistent with the State of Florida's Chapter 1A-31 "PROCEDURES FOR CONDUCTING EXPLORATION AND SALVAGE OF HISTORIC SHIPWRECK SITES" and consistent with the standards and guidelines for archaeological reports in Rule 1A-46.001, Motivation, Inc is providing the following State of Florida Forms for the *Atocha* and *Margarita* wreck sites.

1. FMSF Survey Log Sheets (Form HR6E066R0107, effective 05/2016).
2. FMSF shipwreck forms (Form HR6E051R0705, effective 05/2016).

*\*Note: As requested in a letter dated December 20, 2022, from FKNMS Superintendent, Sarah Fangman, these forms are now added as separate attachments to this report instead of being a part of the report.*

### 9.1 FMSF SURVEY LOG SHEET FORM (*ATOCHA* #MO00141 & *MARGARITA* #MO03397)

\*See attached PDF file: ***Form\_SurveyLog\_v50 Atocha-Margarita FKNMS Report 2026.pdf***

### 9.2 FMSF SHIPWRECK FORM (*ATOCHA*)

\*See attached PDF file: ***Form\_Archaeology\_v50\_Atocha Site v2026-01-28***

### 9.3 FMSF SHIPWRECK FORM (*MARGARITA*)

\*See attached PDF file: ***Form\_Archaeology\_v50\_Margarita Site v2026-01-28***

## 10 **APPENDIX-1, 2025 ATOCHA & MARGARITA RECOVERIES REPORTS**

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Details, digital photographs and illustrations of our recoveries are available on our public Artifact Database at <https://www.melfisher.com/MOBILE/site/Research.html>

See the “Main Menu” to the left for options. Use the “Search for Artifacts” option and the artifact tag numbers to search for a specific item.

## 10.1 2025 ATOCHA & MARGARITA RECOVERIES REPORT

Wreck Site	Vessel	Captain	Recovery Date	Hole #	Tag#	Qty	Description	Latitude_DD	Longitude_DD
Atocha 1622	Dare	Vince Trotta	5/13/2025	3280	Empty Hole	2	Modern Trash	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/13/2025	3281	Empty Hole	1	Modern Trash	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/13/2025	3282	Empty Hole	2	Modern Trash	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/13/2025	3283	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/13/2025	3284	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/14/2025	3285	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/14/2025	3286	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/21/2025	3287	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/21/2025	3288	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/21/2025	3289	Empty Hole	2	Modern Trash	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/21/2025	3290	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/22/2025	3291	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/22/2025	3292	Empty Hole	2	Modern Trash	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/22/2025	3293	94701	1	Ceramic Handle	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/22/2025	3294	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/23/2025	3295	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/23/2025	3296	94702	1	Majolica Plate Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/23/2025	3296	94703	1	Majolica Sherd	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/23/2025	3297	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/23/2025	3298	94704	1	Majolica Plate Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/23/2025	3299	in situ	1	Ballast Stone	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/23/2025	3300	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/24/2025	3301	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/24/2025	3302	94705	1	Silver Plate Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/24/2025	3303	Empty Hole	1	Empty Hole	(b) (4)	

Atocha 1622	Dare	Vince Trotta	5/24/2025	3304	94706	1	Silver Plate Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/24/2025	3305	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/25/2025	air lift	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/31/2025	3306	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/31/2025	3307	In situ	1	Ballast Stone	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/31/2025	3308	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	5/31/2025	3309	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	6/1/2025	3310	94707	1	Silver Coin	(b) (4)	
Atocha 1622	Dare	Vince Trotta	6/1/2025	3311	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	6/1/2025	3312	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	6/26/2025	3313	Empty Hole	1	Modern Trash	(b) (4)	
Atocha 1622	Dare	Vince Trotta	6/26/2025	3314	Empty Hole	1	Ballast Stone	(b) (4)	
Atocha 1622	Dare	Vince Trotta	6/26/2025	3315	Empty Hole	1	Modern Trash	(b) (4)	
Atocha 1622	Dare	Vince Trotta	6/27/2025	3316	94708	1	Silver Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	6/27/2025	3317	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	6/27/2025	3318	94709	1	Silver Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/1/2025	3319	94710	1	Modern Object	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/1/2025	3320	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/1/2025	3321	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/2/2025	3322	94711	1	Modern Object	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/2/2025	3323	94712	1	Modern Object	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/2/2025	3324	94713	1	Silver Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/2/2025	3325	94714	1	Bronze Object	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/2/2025	3325	94715	1	Modern Object	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/3/2025	3326	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/3/2025	3327	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/3/2025	3328	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/9/2025	3329	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/9/2025	3330	Empty Hole	1	Empty Hole	(b) (4)	

Atocha 1622	Dare	Vince Trotta	7/10/2025	3331	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/10/2025	3332	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/10/2025	3333	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/10/2025	3334	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/12/2025	3335	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/12/2025	3336	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/12/2025	3337	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/13/2025	3338	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/13/2025	3339	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/13/2025	3340	94716	1	Iron Key	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/13/2025	3341	94717	1	Olive Jar Sherd	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/13/2025	3342	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/13/2025	3343	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/14/2025	3344	94718	1	Modern Trash	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/14/2025	3345	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/14/2025	3346	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/14/2025	3347	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/14/2025	3348	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/27/2025	3349	94719	1	Silver Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/28/2025	3350	94721	1	Silver Plate Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/28/2025	3351	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/28/2025	3352	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/28/2025	3353	94720	1	Emerald	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/30/2025	3354	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/30/2025	3355	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/30/2025	3356	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/30/2025	3357	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/30/2025	3358	94722	1	Iron Key	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/31/2025	3359	Empty Hole	1	Empty Hole	(b) (4)	

Atocha 1622	Dare	Vince Trotta	7/31/2025	3360	94723	1	Modern Object	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/31/2025	3361	94724	1	Iron Sword Handle	(b) (4)	
Atocha 1622	Dare	Vince Trotta	7/31/2025	3362	94725	1	Iron Barrel Hoop Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/1/2025	3363	Empty Hole	1	Ballast Stone	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/1/2025	3364	94726	1	Iron Barrel Hoop Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/1/2025	3365	94727	1	Modern Object	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/1/2025	3366	94728	1	Olive Jar Sherd	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/1/2025	3366	94729	1	Iron Barrel Hoop Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/1/2025	3366	94730	1	Silver Bit	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/2/2025	3367	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/2/2025	3368	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/2/2025	3369	94731	1	Iron Barrel Hoop Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/2/2025	3369	94732	1	Encrusted Object	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/13/2025	3370	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/13/2025	3371	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/14/2025	3372	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/14/2025	3373	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/14/2025	3374	94733	1	Silver Vessel Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/14/2025	3375	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/14/2025	3376	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/15/2025	3377	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/15/2025	3378	Empty Hole	1	Ballast Stone	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/15/2025	3379	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/15/2025	3380	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/15/2025	3381	94734	1	Silver Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/16/2025	3382	Empty Hole	1	Ballast Stone	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/16/2025	3383	Empty Hole	1	Ballast Stone	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/16/2025	3384	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/16/2025	3385	94735	1	Iron Barrel Hoop Fragment	(b) (4)	

Atocha 1622	Dare	Vince Trotta	8/16/2025	3386	94736	1	Silver Finial	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/17/2025	3387	94737	1	Olive Jar Sherd	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/17/2025	3388	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/17/2025	3389	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/17/2025	3390	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/17/2025	3391	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/18/2025	3392	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/18/2025	3393	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/18/2025	3394	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/18/2025	3395	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/18/2025	3396	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/19/2025	3397	94738	1	Encrusted Object	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/19/2025	3398	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/19/2025	3399	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/19/2025	3400	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/19/2025	3401	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/20/2025	3402	94739	1	Silver Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/20/2025	3402	94740	1	Silver Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/20/2025	3403	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/20/2025	3404	94741	1	Olive Jar Sherd	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/20/2025	3405	94742	1	Iron Barrel Hoop Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/20/2025	3406	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/21/2025	3407	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/21/2025	3408	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/21/2025	3409	94743	1	Olive Jar Sherd	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/21/2025	3409	94744	1	Encrusted Object	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/21/2025	3410	94745	1	Encrusted Object	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/28/2025	3411	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/28/2025	3412	Empty Hole	1	Empty Hole	(b) (4)	

Atocha 1622	Dare	Vince Trotta	8/29/2025	3413	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/29/2025	3414	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/29/2025	3415	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	8/29/2025	3416	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	9/24/2025	3417	94746	1	Iron Scissor	(b) (4)	
Atocha 1622	Dare	Vince Trotta	9/24/2025	3418	94747	1	Silver Coin	(b) (4)	
Atocha 1622	Dare	Vince Trotta	9/24/2025	3419	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	9/24/2025	3420	94748	1	Iron Spike Fragment	(b) (4)	
Atocha 1622	Dare	Vince Trotta	9/25/2025	3421	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	9/25/2025	3422	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	9/25/2025	3423	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	9/25/2025	3424	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	9/26/2025	3425	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	9/26/2025	3426	94749	1	Copper Coin	(b) (4)	
Atocha 1622	Dare	Vince Trotta	9/26/2025	3427	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	9/26/2025	3428	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	9/26/2025	3429	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	9/27/2025	3430	Empty Hole	1	Empty Hole	(b) (4)	
Atocha 1622	Dare	Vince Trotta	9/27/2025	3431	Empty Hole	1	Empty Hole	(b) (4)	

## 11 APPENDIX-4, SALVAGE OPERATION VESSELS, EQUIPMENT, PERSONNEL

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This section has been added at the request of the FKNMS to update them on current salvage operation vessels, excavation equipment, personnel and will be amended from time to time if there are any major changes. These amendments will be sent to the current FKNMS Notification email at [FKNMSPermits@noaa.gov](mailto:FKNMSPermits@noaa.gov).

### MOTIVATION, INC.

#### Gary Randolph, VP & Director of Operations

(b) (4) @melfisher.com

Gary started working for Mel Fisher in 1995 and became the Captain of the 90' salvage vessel "J.B. Magruder" on December 1, 1995, a mere eleven months after signing on to its crew as a diver. On his first trip as captain, they recovered a gold coin and a gold chain - which was the best gift this talented young captain could hope for on his December 11th birthday! People who work with Gary have said on many occasions, he is definitely not afraid to make the sacrifices it takes to pursue his dreams.

In 1997, Gary's hard work and dedication earned him the position of Operations Manager. His previous experience with computers has made him invaluable on land, as well as on sea, as the network administrator and computer guru for the office. He is also responsible for the conservation lab and is diligent in assuring the careful preservation of all artifacts being recovered from the *Atocha* and *Margarita* wreck sites.

One of Gary's first assignments from Mel Fisher was to begin working with the FKNMS to secure permits for the *Atocha* and *Margarita* sites. On December 22, 1997 the first FKNMS permit was secured for the *Atocha Emerald City* area. In the years to follow, Gary secured permits for the rest of the *Atocha* and *Margarita* sites. He also served on the FKNMS Advisory Council from 2006-2009.

In the late 1990's his computer background has also assisted him in using the MS Access program to develop and format one of the most comprehensive Marine Archaeological Artifact Databases in existence. As technology developed, this database was used as the foundation to create the current Mel Fisher SQL based database which houses over 200,000 artifact records and is available to the world via the on-line version at [www.melfisherartifacts.com](http://www.melfisherartifacts.com)

In 2002, Gary shifted his focus to running the survey vessel "Pin Pointer" and a few years later the "Huntress" to develop the computer-controlled survey equipment and mapping programs in an effort to help locate the remaining structure and cargo of the "*Atocha*" and "*Margarita*." He has personally surveyed thousands of miles of sea bottom using magnetometers, side scan sonar and sub-bottom profilers as well as processing the raw data to create detailed charts of the results.

In recent years Gary has been honing his skills as the Expedition Leader for a number of ultra-deep-water missions to locate historic shipwreck sites in water depths beyond 5000 meters. He has planned, budgeted and executed the largest deep ocean side scan survey for historic period shipwrecks ever done. Most recently he's led multiple expeditions to locate and identify a number of these targets using remotely operated vehicles to locate, document and successfully recover artifacts from these ultra-

deep shipwrecks. Admiralty actions under the laws of salvage and finds have been successful on these recoveries in the US District Court for the Southern District of Florida.

Gary is currently leading the design and engineering team that constructed "Dolores", a 1000m rated HAUV (hybrid autonomous underwater vehicle) that has been custom built for the search and identification of historic shipwrecks. He has had hands-on experience in assembling, testing and piloting this amazing vehicle and will continue to develop its capabilities going forward. He is also working to develop EM (electromagnetic) detection technologies that will be used on HAUV's and ROV's which will help to identify deeply buried objects previously out of the range of current detector technology and will also discriminate between all metals in an effort to use remote sensing technology to identify areas for potential excavation activities.

## J.B. Magruder Specifications

- Manufacturer: Custom Hull
- Year: 1956
- Reg Length: 81'-1"
- Reg Breath: 22'-7"
- Reg Draft: 10'-6"
- Gross Tons: 125
- Power: Twin 12-71 (naturally aspirated) Detroit Diesels (approx. 400HP @1800rpm ea.) with twin disk transmissions
- Props: (2) 4-blade, 48" dia. x 43 pitch
- Twin 54" diameter Prop Wash Deflectors
- Generators: Twin Kubota 30kw Diesels
- Top Speed: 10 Knots
- Electronics: Simrad NSS12 Multifunction Display, SDGPS, Fathometer, Radar
- ICOM VHF Radio
- Includes: 3-Point Anchor Mooring System with 10HP Electric Winches and Motor Brakes
- Various 4"-12" dia. x 8'-10' long Portable PVC Airlifts (discharge underwater) powered by CP120 cfm Air Compressor
- 8" Emerald Airlift & Sifting Screen System powered by CP120 cfm Air Compressor
- Bauer 20cfm SCUBA Air Compressor
- AquaPulse Metal Detectors (with 8", 10", 15" diameter search loops)
- Sleeps up to 6 people
- Tender & Anchor Vessel: 21' Workskiff with Yamaha 150 Engine



## Dare Specifications

(b) (4)

- Mfg: Swiftship
- Year: 1971
- Reg Length: 83'-5"
- Reg Breadth: 21'- 7"
- Reg Draft: 7'-4"
- Gross Tons: 90
- Power: Triple 12-71 (naturally aspirated) Detroit Diesels (approx. 400HP @1800rpm ea.) with twin disk transmissions
- Generators: Twin Kabota 30kw Diesels
- Top Speed: 17 Knots
- Props: (3) 30" dia. - 4 blade, 2.5" shaft
- Three 36" dia. Prop-Wash Deflectors
- Electronics: Simrad NSS12 Color Multifunction Navigational Display System with additional Depth Display Monitor, SDGPS, hull mounted side scan sonar, radar
- Survey GPS: Trimble SPS461 Modular SDGPS Positioning System with Heading Receiver
- H-AUV (hybrid autonomous underwater vehicle, tethered) "Dolores", custom built (1000m depth rating)
- Sub-Atlantic Comanche ROV (300m depth rating, tethered)
- ICOM VHF Radio
- 3 Anchor Mooring System with Hydraulic Winches
- 2 Ton Marine Crane
- AquaPulse Metal Detectors (with 8", 10", 15" diameter search loops)
- Various 4"-12" dia. x 8'-10' long Portable PVC Airlifts (discharge underwater) powered by CP120 cfm Air Compressor
- 8" Emerald Airlift & Sifting Screen System powered by CP120 cfm Air Compressor
- Bauer 10cfm SCUBA Air Compressor
- Sleeps up to 7 people
- Tender & Anchor Vessel: 21' WorkSkiff with 150HP Yamaha 4-Stroke Engine



## Huntress Specification

- Mfg: Parker Model 2820 XL Sport Cabin
- Year: 2005
- Reg Length: 27'-7"
- Reg Breath: 9'- 6"
- Reg Draft: 18"
- Gross Weight: 6,400 lbs. dry
- Power: Twin 250 Yamaha 4-Stroke Engines
- Fuel Capacity: 250 Gal
- Top Speed: 40 Knots
- Electronics:
- Simrad NSS12evo3 Color Multifunction Navigational Display System, SDGPS, depth finder, radar, Autopilot System, Underwater Thru-Hull Video Camera, PC NMEA Interface
- ICOM VHF Radio
- Panasonic Toughbook Laptop with fixed docking station for use with Geometrics Cesium 882 Magnetometer
- Nobeltec Navigational Suite Software
- Marine Sonics Side Scan Sonar System
- Includes: Reel Easy Cable Winch System
- 3 Anchor Mooring Capability
- 5" Suction Dredge Powered by 9.5HP 2" Honda Pump
- Aquapulse Metal Detectors



## 12 APPENDIX-5, OTHER WRECKS LOCATED

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Non-Atocha/Margarita archaeological shipwreck site information located by Motivation, Inc and requested by FKNMS Marine Archaeologist Mathew Lawrence at our meeting on April 24, 2018.

**Note: THE FOLLOWING INFORMATION IS NOT FOR PUBLIC RELEASE**

1. (b) (4) [REDACTED] [REDACTED] [REDACTED]
2. (b) (4) [REDACTED] [REDACTED] [REDACTED]
3. (b) (4) [REDACTED] [REDACTED] [REDACTED]
4. (b) (4) [REDACTED] [REDACTED] [REDACTED]
5. (b) (4) [REDACTED] [REDACTED] [REDACTED]
6. (b) (4) [REDACTED] [REDACTED] [REDACTED]
7. (b) (4) [REDACTED] [REDACTED] [REDACTED]
8. (b) (4) [REDACTED] [REDACTED] [REDACTED]
9. (b) (4) [REDACTED] [REDACTED] [REDACTED]

## 13 APPENDIX-6, ATOCHA - MARGARITA PROJECT TIME-LINE

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### ***The Atocha & Margarita 1622 Projects Time-Line***

by Gary Randolph

Contributors: Kim Fisher, Taffi Fisher Abt, Jim Sinclair

This section will present the most significant finds to date on the *Atocha* and *Margarita* sites during its nearly 50 years of continuous work. It will be done in a time-line format, sorted by date and include the details of the vessels and personnel involved as well as bullet points summarizing the find or event.

#### **1968**

##### **Mel Decides to move operations to the Keys to look for the Atocha and Margarita Wrecks**

Mel first saw the *Atocha* and *Margarita* listed in John S. Potter Jr.'s book "The Treasure Divers Guide" published in 1960.

##### **Mel obtained a state contract for all of Monroe County which includes the Keys**

Treasure Salvors do a huge magnetometer survey using the survey boat "Buccaneer" starting in the middle Keys off Lower Matecumbe going north up to central Key Largo and finds close to 40 wrecks. Some of these are to be identified as ships from the lost 1733 Fleet. The "San Jose" wreck is located outside of the states 3 mile limit.

##### **Mel Moves the search to the Marathon Area**

The team started doing aerial mag surveys with Harold Williams and Fay Field. Nothing significant was found.

##### **Mel moves to Key Largo area**

Mel setup his operation out of the "Anglers Club"  
Competitors Burt Webber and Jack Haskins team up to start looking for the *Atocha*.

##### **The State of Florida extends its boundaries.**

State agents start supervising all recovery efforts and now require state artifact tags and logs be used.

#### **1969**

**July: Burt Webber starts working off Matecumbe with 136' vessel "Revenge"**

##### **September: Mel Meets Dr. Eugene Lyons**

Mel met Eugene Lyons' wife Dot in a Ft. Pierce library while looking for shipwreck information. They would soon become friends attending the same church in Vero Beach. Mel asks Eugene to keep an eye out for information on the *Atocha* during his trip to Spain and the Archives of the Indies.

Eugene finds salvage papers for the *Margarita* in Spain's archives which has over 40,000 bundles of documents totaling 50 million pages.

"Cayos del Marques" the Marquesas Keys!!!! (*Eugene Lyons' book, page 37-38*)

## 1970

**Mel moves the search to Key West and the Marquesas Keys area**

**March 1970 Mel files for a state salvage contract for the area west of the Marquesas Keys**

Mel starts searching the area with magnetometer and side scan sonar.

## 1971

**July 12, 1971 Galleon Anchor & First Gold Found**

Bob Holloway on Holly's Folly find 15' galleon anchor while magging in the Quicksand's. This was the anchor just north of the current "Bank of Spain" area.

Don Kincaid finds 8.5' long gold chain next to anchor, first *Atocha* Gold.

**Mid summer Holley Folly finds Margarita site**

## 1972

**"Sand Barge" moved to Atocha anchor site, National GEO sent first film crew to the site.**

**Henrietta Marie found at New Ground**

Found by Bob Holloway on Holly's Folly, Don Kincaid, Spencer Wickens John Brandon, Mike Wiesenbaker State agent still with the State, Steve Wickens, Tim Marsh.

## 1973

**May 20, 1973 The "Bank of Spain" is Found**

Found by the crew of the Virgalona, crewmembers Don Kincaid, Spencer Wickens John Brandon, Mike Wiesenbaker (State agent still with the State of FL), Steve Wickens, Tim Marsh. Eugene Lyon is credited for naming this area the *Bank of Spain*, ballast calculated to be one third of the total on board the *Atocha*. They also found indigo die in this area. John Brandon finds 1,600 silver coins that is the beginning of approximately 6,000 silver coins being found during this period.

**June 17, 1973 Father's Day Kim Fisher finds Gold Disk & Bar**

Found by Captain Kim Fisher and the crew of the Southwind.  
Two gold coins also found that day.

**July 4, 1973 First 3 Silver Bars found to verify identity of "Atocha"**

Found by Captain Kim Fisher on the Southwind, Mike Schneidelbach found the first silver bar, Kane Fisher finds 2nd bar

(Pat Clyne finds 4<sup>th</sup> or 5<sup>th</sup> silver bar in 1976 while on the *Arbutus*.)

According to Don Kinkade, Mike found the first one then all three bars where together. First astrolabe found here by Dirk Fisher along with other navigational equipment.

Bar #569, #794, #4584

**1973 Summertime Kim Fisher Finds the "Poison Cup"**

Personally found by Captain Kim Fisher of the Southwind.

## 1975

### **July 13, 1975 Dirk Fisher Finds the Nine Bronze Cannons**

Dirk Fisher found 5 cannons, then Pat Clyne found 4 more cannons buried in the mud close by in 39 feet of water. Gun #3110 was first one to be positively identified as being from the *Atocha*.

### **July 20, 1975 The salvage vessel Northwind Sinks**

Dirk Fisher, his wife Angel and diver Rick Gage tragically drown.

Survivors: Kane Fisher, Don Kincaid, Donny Jonas, Jim Solnick, Reave (Dirk's friend) Angel's brother Keith Curry aka "Shark Bait" check Duncan's book, Pete Venwestern.

## 1976

### **1976 The Legal Battles Heat Up**

1976 second National Geographic article in June, first film by NatGeo in December  
1976-1982 over 100 court cases

### **1976 The *Arbutus* goes to work the site**

The *Arbutus* is was an old US Coast Guard buoy tender, had no propulsion and was used as a work barge.

### **1976 fall, Mel donates an *Atocha* bronze cannon to Queen of Spain**

He also gave her Dirk Fisher's first gold artifact that he had found on the *Atocha*.  
The cannon remains on display in the Archives of the Indies in Seville Spain.

## 1980

### **1980 The Galleon museum exhibit sank in Key West**

This was a replica Spanish galleon converted into a public museum and exhibit of *Atocha* and *Margarita* artifacts created by the Fisher family.

### **May 10, 1980 The Margarita site is Found**

Virgalona, Captain Kane Fisher

Don: Kane found the first silver bars on the Marg.

Bored with diving under the Virgalona, Don Durant had swam away. About one hundred yards to the SE of the Virgalona's position he finds exposed timbers, ballast and artifacts that will be known as the *Margarita* main pile.

Gold plate, Dick Klautt

Clump of 43 gold chains totaling 180' long approx 14lbs of chain, divers Don, Pat Clyne

\$40 Million dollar wreck

8.5 foot Gold Money Chain, found by Kim Fisher

### **July 7, 1980 Margarita Southern Bronze Cannon Found**

Swordfish, Capt Syd Jones

Cannon found by Larry Beckman while swimming out to check an anchor line

### **July 8, 1980 Margarita Cannonball Clump area was found**

May 1980, Mag hit on Castillon, checked by Swordfish, Capt Syd Jones

## 1981

### **1981 Margarita Northern Bronze Cannon & Anchor**

Subcontractor boat "Tern" owned and captained by Denny Breese. Crew: Dick Klautd  
While they were towing a ferrous-non-ferrous detector sled it snagged on something. Dick Klautd dove down to find that had snagged on a bronze cannon and full size galleon anchor lying next to each other, exposed just like the first cannon had been found.

### **Summer 1981 Three Margarita Anchors found in Hawks Channel**

"Plus Ultra", Captain Bob Moran conducting a magnetometer survey

## 1982

### **1982-83?? Cinta Belt and wedding chain found**

Endeavor, Captain John Brandon, Danny Porter and Lainey

### **February, 1982 MFHRS is founded by Mel Fisher**

Web link to their site

Treasure Donation by Fisher Family \$\$\$?? List some items

### **July 2, 1982 Mel Wins US Supreme Court case!!!!**

Treasure Salvors, Inc is awarded sole title and ownership of the *Atocha*, all of her tackle, armament, apparel and cargo wherever the same may be found, as per Federal Court Orders regarding *Atocha*, i.e., USDC-SDF Case No. 75-1416-Civ-King

1982 Museum gate money (Don said 500,000) went to help rebuild/repair the Martello towers, had treasure exhibit there

### **July 20, 1982 The Emerald Cross is found**

Found on Golden Venture ( subcontractor). Captain/owner Ian Koblick (not present at time).

T.S.Crew: Captain Dick Klautd, Rick "Rico" Ingerson, Ed. Hinkle, KT Budde- Jones. Grady Sullivan and non-diving ship crew are employees of Ian Koblick.

Also during this time, eighteen gold bars, a gold coin, gold/ emerald earring, silver stirrup, silver coins and of course the Emerald Cross would all come up in a progression.

## 1984

### **1984 Atocha Bronze Cannon Found**

Plus Ultra" magging, Fay Fields spots cannon while being towed with Jim Sinclair  
Don has pictures

### **1984 (What day?) 2 Northern Galleon Anchors Found in the Quicksands**

"Plus Ultra", Captain Bob Morran, Morrishia Morran, Jim Sinclair, Bruce Eshman, Fay Field  
Both anchors were broken, only the flukes are found, one is currently in the KW museum, the other one is still on the site. Also, a single piece of eight was found here.

## 1985

### **May 27, 1985 The "Memorial Day" Find**

"Saba Rock" 167' vessel, Captain Jim Duran

13 gold bars

414 silver coins

5pcs gold & emerald jewelry found by Syd & KT (a year later more were found totaling 67 pcs)

10' gold chain

Dauntless found a large "Mast" timber or "Boomkin" 300-400 yards ESE

### **1985 Atocha Swivel Gun Found**

Description of event, old salvors buoy? (Don: Shackle trough the breach lock and attached to the chain plate. Jimmy Buffet diving on it)

### **July 19, 1985 start finding lots of silver coins**

Magruder, Jimmy Buffet taking photo on Arbutus for album.

### **July 20, 1985 Atocha Mother Load Found**

Dauntless, Capt. Kane Fisher, divers Andy Matroci and Greg Wherham

991 Silver bars, 120,000 total silver coins, and copper ingots

(Lots of pictures)

Next day Mel visits the site and dives Motherload, Don has picture of Mel on the bottom stroking silver

### **August 16, 1985 150lbs of GOLD!**

76 gold bars, chains and disks found by 2 divers

50 yards west of AMP

Group of gold coins found NW of AMP

## 1986

**1986 Conservation pictures of Jim Sinclair prepping for big division.** Taffi pushing the button on computer for division to run.

### **Late 1985 or early 1986 Emerald City**

Dauntless, Captain Kane Finds 77ct emerald

Winter of 1986 "Dreams of Gold" movie made.

Emerald shower near pilots chest. Light emeralds.

**1990 The Florida Keys National Marine Sanctuary is designated by congress**

### **1995 Emerald City Barge**

Dauntless, Captain Kane finds boson's whistle & jewelry

### **November 30, 1995 Coin Chest found near BOS**

Magruder finds 2,100 silver coins, many rare Mexico mint, 1 & 2 Reale coins

Captain Dick Engles, First Mate Gary Randolph, Kevin Holiday

**1996 ? Empress Emerald Ring Found**

Magruder, Captain Gary Randolph, diver Clyde Kuntz found the ring while diving and detecting around the main ballast pile

**1997**

**1997 ? Three Northern Margarita Anchors Found**

Gambler mag hit, Terry & Carla Fisher

Magruder Captain Gary Randolph finds anchors on Gamblers hits

Two 10' anchors on top of each other, one missing flukes one missing ring.

Just to the north was an intact 14' galleon anchor

**1997 Papal Seal Found**

Magruder, Captain Gary Randolph, diver John Corcoran

**1998 Dauntless finds silver bar**

Dauntless, Captain Robbie Hanna

**July 14, 2000 3 Gold Bars, 10' Gold Chain, 127 Silver coins found in Quicksands**

Magruder, Capt Gary Randolph, crew Jeff Dickinson, Scott Synar, Ben Kinnaman

**August 20, 2005 Atocha Galleon Anchor Found South of Main Pile**

Huntress, Captain Gary Randolph, First Mate John Corcoran

**2007**

**June 25, 2007 Margarita Gold Bar, Chains, Jewelry & Box of Pearls Found**

Blue Water Rose, Captain Dan Porter

**October 18, 2007 Breach Chamber Found on Atocha's NW Carpenter's Trail**

Magruder, Captain Andy Matroci

**2008**

**February 23, 2008 12" Atocha Gold Bar, found at the NW end of Atocha trail**

Magruder, Captain Andy Matroci

**June 24, 2008 Margarita Gold Chalice Found**

Blue Water Rose, Captain Dan Porter

**2009**

**June 13, 2009 Margarita Anchor Ring Found North of #3 Galleon Anchors**

Southern Rose, Captain Dan Porter

**2011**

**September 10, 2011 Atocha Admiral's Bronze Seal Found on NW Trail**

Magruder, Captain Andy Matroci

**April 16, 2011 Atocha Gold Bar Found on NW Trail**

Magruder, Captain Andy Matroci

**March 23, 2011 Atocha Gold Rosary Found on NW Trail**

Magruder, Captain Andy Matroci

**2012**

**August 4, 2012 Atocha Emerald Ring Found on NW Trail**

Magruder, Captain Andy Matroci

**2013**

**2013 Northern Most Atocha Silver Coin Found**

Magruder, Captain Andy Matroci

**2013 Margarita Northern Most Timber Found**

Blue Water Rose, Captain Dan Porter

**2013 190 Musket Balls Found on Atocha's NW Carpenter's Trail**

Magruder, Captain Andy Matroci

**2015**

**November 9, 2015 Atocha Emerald Wing Found on NW Trail**

Magruder, Captain Andy Matroci

**2016**

**August 21, 2016 Atocha Onyx Square Found on NW Trail**

Magruder, Captain Andy Matroci

**2021**

**July 16, 2021 Atocha Gold Coin Found in Quicksands**

Magruder, Captain Tim Meade

*To be continued.....*

# 14 APPENDIX-7, BIBLIOGRAPHY - ATOCHA & MARGARITA

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## 14.1 INDEX OF 1622 FLEET RESEARCH

by Duncan Mathewson

\*This document is a working draft to be amended from time to time.

Update History:

January 1, 2023, by Gary Randolph

### 14.1.1 Publications

Compiled publications, unpublished manuscripts and data stemming from the 1622 research on the *Atocha & Margarita* wreck sites from 1969 to 2023.

I.	Historic Introduction		
	Cultural and Historical Meaning of the 1622 Shipwrecks	1975	Lyon & Mathewson
	Mathewson's first article to SHA with Larry Murphy & Bill Spencer	1975	Mathewson
	What the Documents Say	1987	Lyon
	Spain and the New World	1988	Christie Catalog
	Search and Discovery	1988	Christie Catalog
	The Ill-Fated Flota of 1622	1988	Christie Catalog
II.	Operations		
	Excerpts from Mathewson's M.A. Thesis		Mathewson
	Excerpts from Lyon's Book, 1st Book, 2nd Edition		Lyon
	Excerpts from Mathewson's Book		
	Digging Procedures - Conference Paper		Mathewson
	<i>Atocha's A-Team</i>		Shaughnessy
	<i>Atocha</i> NG	Lyon	
	<i>Margarita</i> NG		Lyon
	Beyond the Glitter: PCD Notes & Interpretation		Mathewson
	Queen's Museum Catalog – Archaeological Note		Mathewson
	Mapping the Mother Load		Dorwin
	Mapping the <i>Nuestra Senora de Atocha</i>		Malcolm
III.	Survey & Discovery		
	Hurricane Model Tracking the <i>Atocha</i>	1973	John Cryer
	Excerpts from Lyons Book	1981	Lyon
	Excerpts from Mathewson's Books	1977/86	Mathewson
	Pulse Induction Metal Detecting		Brandon
	Mail Boxes NOAA Manual	1981	Mathewson
	Excerpts from SCR Corps Study	1981	Mathewson
IV.	Small Finds		
	<i>Atocha</i> Glass		Malcolm
	Copper Ingots		Malcolm
	Bezoar Stones		Malcolm
	Pilot's Chest		MacIntosh
	Pewter		Malcolm
	Shackles		Malcolm
	Chain's Box		Malcolm
	Swords and Left-Handed Daggers M.A. Degree		Lusardi
	Pottery Research Papers 1975-77 at F.A.U.		Mathewson
	Archaeology of Tourism		MFMHS
	Fasteners		Mathewson
	Ceramics from the <i>Nuestra Senora de Atocha</i> - Wrecked 1622	1986	Marken
	<i>Atocha</i> Porcelain		Malcolm
	Lead Bale Seal		Tedesco

V.	<p>Coins</p> <p>Coins of the <i>Atocha</i>  The Lima Chest  1622 Coins A.N.A. Booklet  Early Lima Mint Coin  Coins of the Lost 1622 Wrecks  Gold &amp; Silver Coins of the <i>Atocha</i> &amp; <i>Margarita</i>  Treasure Coins of the Nuestra Señora de Atocha and the Santa Margarita,  (the 2022 Anniversary Edition)  Untangling the Record—A Contemporary Review of Potosi and Lima Mint Coins  and Assayer History from the Mint Openings up to 1622</p>	<p>Sandy McKinney  Sandy McKinney  Neil Harris  Malcom  KT Budd Jones  Christie Catalog  Carol Tedesco</p> <p>Carol Tedesco</p>
VI.	<p>Historical &amp; Archaeological Interpretations</p> <p>The Face of 17th Century Spain  Portrait &amp; Identity  Influence in 16th Century Spanish Decorative Arts  Mestizo Silver  A Bridge of Ships  Faith, Hope, &amp; Tragedy  Mestizo Art</p>	<p>Byrna West  M. Burnside  Andrews Kelly  James Sinclair, MA  Eugene Lyon  K. Amundson &amp; Sandy McKinney  MFMHS Staff</p>
VII.	<p>Conservation</p> <p>Iron Conservation, Seabed to Showcase  Shortcuts to Artifact Drawing  Making Something from Nothing  Cross Staff Restoration  Restoration of the poison Cup  Coin Cleaning</p>	<p>James Sinclair, MA  Larissa Dillon  W. Zacharchuk  Stimpson  Joseph Turnbach,  Henry Taylor</p>
VIII.	<p>Jewelry</p> <p>Jewels of Spain 1491, 1972,1942  Emeralds of the <i>Atocha</i>  Emeralds of the <i>Atocha</i>  1622 Jewelry</p>	<p>Priscilla Muller  Manual Marcial  Christie's Catalog  Muller</p>
IX.	<p>Historical Documentation</p> <p>Excerpts from Gene's Book  1622 Manifests  Cannon List  Ships Papers</p>	<p>Eugene Lyon  Eugene Lyon  Eugene Lyon  Eugene Lyon</p>
X.	<p>Exhibition &amp; Education</p> <p>Behind the Scenes at MFMHS  Producing an Astrolabe: An Ancient Craft  Curatorial Methods  Made by Loving Hands at Work  <i>If Shipwrecks Could Talk</i> Middle School Module Ph.D. Dissertation  <i>Sunken Treasure</i> (Book)  <i>The Search for the Atocha Treasure</i> (Book)</p>	<p>John McGarry  Bwitt &amp; Zacharchuk  John McGarry  Sandi Dalton  Mathewson  Gail Gibbons  O'Byrne-Pelharn &amp; Balcer</p>
XI.	<p>Navigation</p> <p>Navigation on the <i>Nuestra Senora de Atocha</i> I &amp; II  <i>Atocha</i> Astrolabes - Book &amp; Articles Early 16th Century Navigation  Early 16<sup>th</sup> Century Navigation  Mariners Astrolabes  Astrolabe Picture  Astrolabe &amp; Navigational Dividers – Sundial</p>	<p>John Cryer  Stimpson  Christie's Catalog  Malcom  National Geographic  Queens Museum</p>
XII.	<p>Gold &amp; Silver Bullion</p>	

	Bullion of the <i>Atocha</i> & <i>Santa Margarita</i> Marks on <i>Atocha</i> Silver Spanish Treasure Bars from New World Shipwrecks (Book) 1622 Silver Wares	Christie's Catalog Christie's Catalog Alan Craig & Ernie Richards Green
XIII.	Hull Structure	
	<i>Atocha</i> Timbers: A Preliminary Study Heritage in Wood <i>Atocha</i> Hull Structure <i>Atocha</i> Reconstruction Notes & Drawings <i>Atocha</i> Timbers at FKCC Lead Hull – Sheathing <i>Atocha</i> Timbers: Field Notes & interpretation Excerpts from Book Spanish Galleons 1530-1690	David Moore David Moore Schwicker Muir Mathewson Malcom Mathewson Mathewson Angus Konstam
		2004
XIV.	Guns	
	Excerpts from Book and MA Excerpts from Book with Documents Guns of the <i>Atocha</i> <i>Atocha</i> Guns Where are all the Cannons?	Mathewson Lyon Mathewson Muir Angus Konstam
XV.	Ground Tackle	
	Excerpts from Book <i>Atocha</i> Anchors 1622 Anchors	Mathewson Muir Portia Takakjian
XVI.	Ballast	
	Excerpts from Conference Papers & Field Notes	Mathewson
XVII.	Organic Remains	
	Ostological Remains on <i>Santa Margarita</i> Floating Technique for Plant Residue	Olsen Malcom
XVIII.	Data Analysis	
	Early Computer Systems (1985-1995) Later Computer Systems (1995-2005) Computerized Mag Systems & Side-Scan Anomaly Mapping & Bathymetric Contouring (2000-2005)	Taffi Fisher Abt & Mark Carlson Gary Randolph & Cliff Siriman  Gary Randolph & Cliff Siriman
XIX.	Legal Cases	
	(To Be Listed)	Horan, Lewis, McHaley, VanderCreek
XX.	Addendum (In MFMHS Library)	
	(Some titles are duplicated in earlier sections)	
	<i>The Nuestra Senora de Atocha: A Report of Investigations of a Spanish Galleon Sunk off Key West in 1622</i>	Dr. John Dorwin
	<i>Archaeology and The Nuestra Senora de Atocha</i>	Dr. John Dorwin
	<i>Mapping the Nuestra Senora de Atocha 1985-86</i>	Cory Malcom
	<i>Preliminary Assessment of the Structural Remains of the Nuestra Senora de Atocha</i>	David Moore
	<i>Timbers of the Atocha</i>	William Schwicker ill

	<i>The Anchors of the 1622 Spanish Galleons Atocha and Santa Margarita</i>	Portia Takakjian
	<i>Preliminary Report on the Two Anchors Found in Hawk Channel</i>	Duncan Mathewson
	<i>Guns of the 1622 Spanish Galleons - A Preliminary Study</i>	William Muir
	<i>Wood Containers of the Atocha: Specie Boxes, Pilot's Chest, and Chain Box</i>	David MacIntosh
	<i>Piloting the Past: Navigational Equipment from the Nuestra Senora de Atocha</i>	Christen Gober
	<i>Preliminary Report on the Ceramics from the Nuestra Senora de Atocha - Wrecked 1622</i>	Mitchell Marken
	<i>Preliminary Report on Silver Objects of the Atocha</i>	James Sinclair
	<i>Images in Silver: A Glance at the Merging of Hispanic and Peruvian Artistic Traditions</i>	James Sinclair
	<i>A Preliminary Report on the Skeletal Remains from the Spanish Ship, Nuestra Senora de Atocha</i>	Dr. Robert Pickering
	<i>Seed Identification: Shipwreck Atocha</i>	Lee Newsom
	<i>A Chemical Flotation Technique as Applied to Deposits Recovered on the Nuestra Senora de Atocha</i>	Cory Malcom
	<i>Computer Applications on the Atocha Artifact Assemblage</i>	Mark Carlson
	<i>Fauna/ Assemblage Analysis/or the Nuestra Senora de Atocha and the Santa Margarita</i>	Catherine Gaither
	Shipwreck Archaeology and Commercial Salvage: Conflict and Proposal	Kathleen Bernard
XXI.	Compendium Notes	Mathewson / Lyon
XXII.	Research Bibliography (c. 2000 draft)	Mathewson

## 14.1.2 *Nuestra Senora de Atocha* and *Santa Margarita* Bibliography – Archival Documents

*\*This Section Is A Working Draft To Be Updated Over Time*

### I. Publications

- Amundson, K. And S. McKinney. 1989  
"Faith, Hope and Tragedy: Some New Insights Concerning 17th & 18th Century Shipwreck Artifacts"  
Astrolabe Journal of the Mel Fisher Maritime Heritage Society Inc.  
Vol. 5 N° 1 pp. 22-32  
Key West, FL  
Mel Fisher Maritime Heritage Society
- Armstrong, T. & Abt, T. 2022  
"Finding X"  
Independently published
- Baird, Robert P.  
"Emerald Sea - The making and unmaking of a half-billion-dollar treasure hunt"  
Harper's Magazine  
FOLIO — From the April 2016 issue
- Brandon, J. 1987  
"Pulse Induction Metal Detectors" in  
Seafarers Journal of Maritime Heritage Vol. 1 (Ed) Mathewson  
pp. 165-169  
Woodstock, VT  
Seafarers Heritage Library
- Bass, George  
"Ships and Shipwrecks of the Americas"  
Thames and Hudson, 1988
- Burgess, R. F. 1977  
"They Found Treasure" (interviews)  
pp. 51-75, 170-238  
New York  
Dodd, Mead & Co.
- Burnside, M. H. 1992  
"Portrait and Identity"  
Astrolabe Vol.7 N° 1 pp. 19-23  
Key West, FL  
Mel Fisher Maritime Heritage Society
- Burt, E.V. and W. Zactiarchllk ( )  
"Producing an Astrolabe: An Ancient Craft"  
Astrolabe Vol.8 N° 1. pp.32 - 36  
Key West, FL  
Mel Fisher Maritime Heritage Society
- Chadour, A. Beatriz 1993  
"Die *Nuestra Senora de Atocha* und Die *Santa Margarita*: der Untergang  
der Flotte im Jahre 1622"  
in Herrenhauser 93  
Hannover: Kunst und Antiquitäten - Messe, Hannover  
pp A10-A41
- Christie's 1988  
"Gold and Silver of the *Atocha* and *Santa Margarita*"  
Auction Catalog, June 14-15, 1988  
New York, NY
- Cryer, J.P. 1988  
"Navigation on *Nuestra Senora de Atocha*" Part I

Astrolabe Journal of the Mel Fisher Maritime Heritage Society Inc.  
Vol. 4 N° 1 pp. 2-5  
Key West, FL  
Mel Fisher Maritime Heritage Society

1988

"Navigation on *Nuestra Senora de Atocha*" Part II  
Astrolabe Journal of the Mel Fisher Maritime Heritage Society Inc.  
Vol. 4 N° 2 pp. 21-32  
Key West, FL  
Mel Fisher Maritime Heritage Society

1989

"Tracking the *Atocha*"  
Appendix 6 in Lyon, 1989  
Search for the Motherload of the *Atocha*  
Port Salerno, FL  
Florida Classics Library

Daley, R. 1977

Treasure  
New York:  
Random House

Dalton, S. 1990

"Made by Loving Hands at Work"  
Astrolabe Journal of the Mel Fisher Maritime Heritage Society Inc.  
Vol. 6 N°1 pp. 24-31  
Key West, FL  
Mel Fisher Maritime Heritage Society

Dillin, D. L. 1987

"Short Cuts to Artifact Drawings: Drawing Shipwreck Artifacts Quickly and Accurately"  
Seafarers Journal of Maritime Heritage Vol. 1 (Ed) Mathewson  
pp. 143-145  
Woodstock, VT  
Seafarers Heritage Library

Dranov, Paula 1982

"Hi-tech Treasure Hunt"  
Science Digest  
Vol. 90, No. 12, Dec., pp. 60-65

Fine, John Christopher 2006

"Treasures of the Spanish Main: Shipwrecked Galleons in the New World"  
Lyons Press,  
Guilford CT, 2006

Harris, N. 1986

"Coins of the *Nuestra Senora de Atocha*"  
The Numismatist  
XCIX N° 10 pp.2017-2040

Jones, S. 2016

"Atocha Treasure Adventures: Sweat of the Sun, Tears of the Moon: Havana Connection Edition"  
CreateSpace Independent Publishing Platform; 2nd edition

Kelly, A. 1992

"Influences in 16th Century Spanish Decorative Arts: A View from the Permanent Collection"  
Astrolabe Vol.7 N° 1 pp. 24-29  
Key West, FL  
Mel Fisher Maritime Heritage Society

Lusardi, Wayne R. 1998

"Shipwrecked Swords: An Examination of Edged Weaponry Recovered from Spanish Colonial Vessels and Archaeological Sites, 1492-1733"  
MA Thesis in Maritime History and Nautical Archaeology  
East Carolina University

- Lyon, E. 1976  
"The Trouble with Treasure"  
National Geographic Magazine  
Vol. 149, No. 6, June, pp. 787-809
- 
- 1979, 1985  
"The Search for the *Atocha*"  
New York  
Harper & Row Publishers, Inc.
- 
- 1982a  
"Treasure From the Ghost Galleon."  
National Geographic Magazine  
Vol. 161, NO. 1, February, pp. 228-234
- 
- 1982b  
"Treasure from the Ghost Galleon"  
Reader's Digest  
Vol. 121, No. 724, August. pp. 104-110
- 
- 1987  
"A Bridge of Ships"  
Astrolabe Journal of the Mel Fisher Maritime Heritage Society, Inc.  
Vol. 3<sup>o</sup> N<sup>o</sup> 1 pp. 2-7  
Key West, FL  
Mel Fisher Maritime Heritage Society
- 
- 1989  
Search for the Motherlode of the *Atocha*  
Port Salerno, FL  
Florida Classics Library
- Lyon, E. and B.A. Purdy 1982  
"Contraband in Spanish Colonial Ships"  
Itinerario: Journal of the institute of European Expansion  
Vol. 6 N<sup>o</sup> 2 pp. 91-108  
University of Leiden
- Macinnis, J. B. 1987  
"The Dream Weaver" in  
Seafarers Journal of Maritime Heritage  
Vol. 1 (Ed) Mathewson pp. 24-27  
Woodstock, VT  
Seafarers Heritage Library
- MacIntosh, D. 1987  
"The Pilot's Chest"  
Astrolabe Journal of the Mel Fisher Maritime Heritage Society Inc.  
Vol. 3 N<sup>o</sup> 1 pp. 8-13  
Key West, FL  
Mel Fisher Maritime Heritage Society
- Malcom, C. 1990  
"Glass from the *Nuestra Senora de Atocha*"  
Astrolabe Journal of the Mel Fisher Maritime Heritage Society Inc.  
Vol. 6 N<sup>o</sup> 1 pp. 2-16  
Key West, FL  
Mel Fisher Maritime Heritage Society
- 
- 1993  
"Floatation of Waterlogged Organics: The *Atocha* Example"  
Astrolabe Vol.8 N<sup>o</sup> 1 pp. 2-7  
Key West, FL  
Mel Fisher Maritime Heritage Society
- Marcial, M. 1993

"Emeralds of the *Atocha*"  
Astrolabe Vol. N° 1 pp. 20-31  
Key West, FL  
Mel Fisher Maritime Heritage Society

Honey, Ellen 2016  
Marine Life Magazine  
"Finding Lost Treasures of the Spanish Empire – Marquesas Keys to the Dry Tortugas"  
January 2016 Issue

Market Watch 2015  
"Meet the treasure seekers who hunt millions in undersea gold"  
Interview with Kim Fisher  
Published: Nov 20, 2015

Marken, M. M. 1987  
"Pottery Finds from the 1985 *Atocha* Excavation: Insights on the Olive Jar"  
Seafarers Journal of Maritime Heritage  
Vol. 1 (Ed) Mathewson  
pp. 28-31  
Woodstock, VT  
Seafarers Heritage Library

---

1994  
"Pottery from Spanish Shipwrecks, 1500-1800"  
University Press of Florida; First edition (March 20, 1994)  
Key West, FL  
Mel Fisher Maritime Heritage Society

Mathewson, R. D. III 1977  
"Method and Theory in New World Historic Wreck Archaeology: Hypotheses Testing on the Site of *Nuestra Senora de Atocha*, Marquesas Keys, Florida"  
MA thesis, Florida Atlantic University  
Boca Raton, Florida

---

1982  
"Archaeological Treasure: Search for the *Atocha*"  
Seafarers Heritage Library  
Woodstock, VT & Key West, FL

---

1986  
Treasure of the *Atocha*  
New York, NY  
E.P. Dutton

McGarry, J. II 1988  
"Curatorial Methods"  
Astrolabe Journal of the Mel Fisher Maritime Heritage Society Inc.  
Vol. 4 N° 2 pp. 13-20  
Key West, FL  
Mel Fisher Maritime Heritage Society

---

1989  
"Behind \_the Scenes at MFMHS: Planning and Mounting Exhibits"  
Astrolabe Journal of the Mel Fisher Maritime Heritage Society Inc.  
Vol: 5 N° 1 pp. 3-8  
Key West, FL  
Mel Fisher Maritime Heritage Society

McKinney, S. 1987  
The 'Lima' Chest"  
Astrolabe Journal of the Mel Fisher Maritime Heritage Society Inc.  
Vol. 3 N°1 pp. 17-24  
Key West, FL  
Mel Fisher Maritime Heritage Society

- 
- \_\_\_\_\_1989  
"Nuestra Senora de *Atocha*: An Ancient Representation of the Virgin"  
Astrolabe Journal of the Mel Fisher Maritime Heritage Society Inc.  
Vol. 5 N° 2 pp. 2-16  
Key West, FL  
Mel Fisher Maritime Heritage Society
- 
- ( )  
"A Unique Representative Collection of 237 New World Spanish Coins Recovered from the  
Wreck of the *Nuestra Senora de Atocha* - The Research Coin Collection"  
Christie's Auction Catalog
- Mel Fisher Maritime Heritage Society Staff 1989  
"Mestizo Art"  
Astrolabe Journal of the Mel Fisher Maritime Heritage Society Inc.  
Vol. 5 N° 2 pp. 18-22  
Key West, FL  
Mel Fisher Maritime Heritage Society
- Muir, W. 1989  
"Guns of the 1622 Spanish Galleons - A Preliminary Study"  
Appendix H in Lyon 1989  
Port Salerno, FL  
Florida Classics Library
- Muller, P. E. 1992  
Jewels of Spain: 1491, 1972, 1992  
Astrolabe Vol. 8 N° 1 pp. 8-19  
Key West, FL  
Mel Fisher Maritime Heritage Society
- Richie, Charlie (Editor/Publisher) 2014  
"Search for Atocha - Mel Fisher - Gold!"  
The Backwoodsman Magazine  
May/June 2014 Issue
- Schneider, J.M., S.T. Lubowsky & R.D. Mathewson III 1982  
"Shipwrecked 1622, The Lost Treasure of Philip IV"  
Queens Museum Exhibit Catalog
- Schwicker, B. 1985  
"Pieces of Eight"  
Wooden Boat pp. 56-62
- Shaughnessy, C. 1987  
"The *Atocha*'s A Team"  
Seafarers Journal of Maritime Heritage Vol. 1 (Ed) Mathewson  
pp. 7-23  
Woodstock, VT  
Seafarers Heritage Library
- Sinclair, J. 1987  
"Iron Conservation: Seabed to Showcase: A Nuts and Bolts Beginners Guide to Artifact Conservation"  
Seafarers Journal of Maritime Heritage Vol. 1 (Ed) Mathewson  
pp. 212-214  
Woodstock, VT  
Seafarers Heritage Library
- Smith, Jedwin 2003  
"Fatal Treasure: Greed and Death, Emeralds and Gold, and the Obsessive Search for the Legendary Ghost Galleon *Atocha*"  
John Wiley and Sons
- Stimson, A. 1992 ?  
Astrolabe Study ??  
Mariner's Museum London

- 
- \_\_\_\_\_1985  
The Mariner's Astrolabe: A Survey of 48 Surviving Examples  
Coimbra University  
Coimbra, Portugal
- Tedesco, C. 2022  
Treasure Coins of the Nuestra Señora de Atocha and the Santa Margarita, (the 2022 Anniversary Edition)
- Tedesco, C. 2022  
Untangling the Record—A Contemporary Review of Potosi and Lima Mint Coins and Assayer History from the Mint Openings up to 1622
- Treasure Salvors, Inc. 1980  
"Spanish Fleet, The 1622 Treasure of the Nuestra Senora de  
*Atocha* and *Santa Margarita*" Catalog
- 
- \_\_\_\_\_1981  
"The Treasure of 1622" Catalog"
- Tucker, W. 2022  
"Today's the Day – The Mel Fisher Story"  
Published by Brick Tower Press
- Wade, N. 1981  
"Galleons Yield Gold, Silver, and Archaeology"  
Science Digest  
Vol. 212, No 4502 June, pp. 1486-87
- Weller, R. 1997  
The Dream Weaver
- West, B.O. 1992  
"The Face of 17th Century Spain"  
Astrolabe Vol.7 No 1 pp. 12-18  
Key West, FL  
Mel Fisher Maritime Heritage Society
- Wilson, Dr. Wendell E. (Publisher & Editor-in-Chief) 2016  
"Colombian Emeralds!"  
The Mineralogical Record  
Vol. 47, No. 1 January - February 2016
- Zacharchuk, W. 1988  
"Making Something from Nothing"  
Astrolabe Journal of the Mel Fisher Maritime Heritage Society, Inc.  
Vol. 4 N° 1 pp. 6-15  
Key West, FL  
Mel Fisher Maritime Heritage Society

## II. Manuscripts And Conference Papers

- Carlson, M. 1987  
"Computer Applications on the *Atocha* Artifact Assemblage"  
In *Atocha* Archaeology Symposium  
Society for Historical Archaeology I Conference on Underwater Archaeology  
January 9  
Savannah, GA
- Darwin, J. 1987 a  
Archaeology and the *Nuestra Senora de Atocha*  
*Atocha* Archaeology Symposium  
Society for Historical Archaeology/ Conference on Underwater Archaeology  
January 9  
Savannah, GA

- \_\_\_\_\_ 1987 b  
The *Nuestra Senora de Atocha*:  
A Report of Investigations of a Spanish Galleon Sunk off Key West, Florida in 1622
- Demyttenaere, N. 1987  
Conservation for the *Atocha* Treasure: Goals and Limitations  
*Atocha* Archaeology Symposium  
Society for Historical Archaeology I Conference on Underwater Archaeology  
January 9  
Savannah, GA
- Gober, C. 1987  
"Piloting the Past: The Navigational Equipment from the *Nuestra Senora de Atocha*"  
*Atocha* Archaeology Symposium  
Society for Historical Archaeology / Conference on Underwater Archaeology  
Savannah, GA
- Lyon, E. 1970  
1622 Fleet Loss Narrative, MS
- \_\_\_\_\_ n.d.a  
List of Nuestra Senora de Atocha, 1622, Averia Galleon, MS
- \_\_\_\_\_ 1973  
List of Gear and Equipment and Some Construction Details of *Nuestra Senora de Atocha* 1622  
Averia Galleon. MS
- \_\_\_\_\_ 1975  
Data on the Identification of Shipwreck Site 8M0141 in the Marquesas Keys  
Florida. M.S.
- \_\_\_\_\_ 1976  
"The Identification of a 17th-century Spanish Galleon, *Nuestra Senora Atocha*"  
Paper presented at the St. Augustine Historical Society
- \_\_\_\_\_ 1977  
"Spanish Cultures in Colonial Florida and their Connection with Historic Shipwrecks"  
Paper presented at the Conference on Florida Historic Shipwreck Archaeology
- \_\_\_\_\_ 1980  
"A Historian's Thoughts on Some Shipwreck Models"  
Paper presented at the Conference on Maritime Cultural Heritage of Florida Keys: How can it be Preserved?  
Florida Endowment for the Humanities,  
Key West, Florida
- \_\_\_\_\_ 1987  
"*Atocha*: What Documents Told"  
in *Atocha* Archaeology Symposium  
Society for Historical Archaeology I Conference on Underwater Archaeology  
January 9  
Savannah, GA
- Lyon, E. and R. D. Mathewson III 1975 a  
"The Historical and Archaeological Meaning of the 1622 Shipwrecks off the Marquesas Keys, Florida"  
Paper presented at the Florida Historical Society Conference  
Gainesville, Florida
- \_\_\_\_\_ 1975 b  
"An Introduction to the Ethnohistory of the Lower Florida Keys"  
Paper presented at the American Society for Ethnohistory Conference  
Gainesville, Florida
- Lyon, Eugene and Barbara Purdy 1982  
"Contraband in Spanish colonial Sips". Itinerario:  
Journal of the Institute of European Expansion  
University of Leiden

- Lyon, Eugene, R. Duncan Mathewson III and Kathleen M. Bernard (In Preparation)  
"An Overview of the History and Archaeology of the 1715 Spanish Treasure Fleet off the East Coast of Florida"  
Florida Anthropologist.
- MacIntosh, D. 1986  
Wooden Containers of the *Atocha*: Specie Boxes, Pilot's Chest, and Chain Box  
MS
- Malcom, C. 1987  
A Chemical Flotation Technique as Applied to Deposits Recovered from the *Nuestra Senora de Atocha*
- Mathewson, R. D. 1975 a  
"Historical Shipwreck Archaeology: new developments from the lower Florida Keys"  
The Conference on Historic Site Archaeology Papers 1973, Vol. 8, pp. 121-128  
University of South Carolina
- \_\_\_\_\_ 1975 b  
"A New Methodological Approach to Shipwreck Archaeology"  
Paper presented at the Society for Historical Archaeology and International Conference on Underwater Archaeology  
Charleston, South Carolina
- \_\_\_\_\_ 1975 c  
"Historic Shipwreck Ceramics: A Preliminary Analysis of Olive Jar Data from the Wreck Site of the *Nuestra Senora de Atocha*"  
Department of Anthropology, Florida Atlantic University,  
Boca Raton, Florida
- \_\_\_\_\_ 1975 d  
"Archaeological Recovery: Its Potential and Limitations on New World Shallow Water Sites", MS
- \_\_\_\_\_ 1976 a  
"Introductory Notes on Operationalizing a Procedural Model for the Conservation of Archaeological Data from the Wreck Site of the *Nuestra senora de Atocha*", MS
- \_\_\_\_\_ 1976 b  
"An introduction to the Numismatic Assemblage from the *Nuestra Senora de Atocha*", MS
- \_\_\_\_\_ 1977 a  
"Archaeological Research on the Wreck Sites of the *Nuestra Senora de Atocha*: A General Overview of the Mapping and survey Procedures"  
Paper presented at the Society for Historical Archaeology and International Conference on Underwater Archaeology  
Ottawa, Canada
- \_\_\_\_\_ 1977 b  
"An Introduction to the Use of Aerial Photographic Imagery for Locating and Interpreting Shallow Water Shipwreck Sites off the Florida Coast"  
Department of Geography, Florida  
Atlantic University  
Boca Raton, Florida
- \_\_\_\_\_ 1977c  
"Method and Theory in New World Historic Wreck Archaeology: Hypothesis Testing on the Site of *Nuestra Senora de Atocha*, Marquesas Keys, Florida". M.A. Thesis, Florida Atlantic University, Boca Raton, Florida.
- \_\_\_\_\_ 1987  
"*Atocha* Archaeology Symposium: A Glimpse Behind the Glitter"  
Society for Historical Archaeology/ Conference on Underwater Archaeology  
January 9  
Savannah, GA
- Mathewson, R. D. and P. Clyne 1977  
"Digging Procedures Utilized in the Search for the Lower Hull Section of the *Nuestra Senora de Atocha*"  
Paper presented at the Society for Historical Archaeology and International Conference on Underwater Archaeology  
Ottawa, Canada
- Mathewson, R. D. and E. Lyon 1976  
"The Guns of the *Nuestra Senora de Atocha*", MS

- Mathewson, R. D. and E. Lyon and R. F. McAllister . 1976  
 "Atocha Data Evaluation Report", MS
- Mathewson, R. D., L. Murphy and S. Spencer 1975  
 "New Concepts in Marine Archaeology: Shallow Water Historic Archaeology in the Lower Florida Keys"  
The Conference on Historic Site Archaeology Papers  
 vol. 9, pp 141-151  
 University of South Carolina
- Marken, M. 1985  
 Atocha Ceramic Research
- McIntyre, K. A. 1983 ??  
 "Analysis of Olive Jar Rims from *Nuestra Senora de Atocha* and *Santa Margarita*: A Step towards Detecting Variations in Shipwreck Ceramics Through Time"  
 Florida Anthropologist
- Miguel, L. ( )  
 Coins of the *Nuestra Senora de Atocha* and *Santa Margarita*
- Moore, D. 1985  
 Preliminary Assessment of the Structural Remains of the *Nuestra Senora de Atocha*  
 20 August Report  
 Key West, FL
- \_\_\_\_\_1987  
 "Heritage in Wood: A Preliminary Look at the Structural Evidence of a 17th Century Spanish Galleon"  
 in Atocha Archaeology Symposium  
 Society for Historical Archaeology/ Conference on Underwater Archaeology  
 January 9  
 Savannah, GA
- \_\_\_\_\_(In preparation)  
 "The Henrietta Marie: A Preliminary Site Report on a Late 17-th century English Merchant-Slaver"  
 Florida Anthropologist.
- Muir, W. ( )  
 Resource Authority: Spanish 16th and Early 17th Century Marine Gun Carriage Details
- Pickering, R. B. 1987  
 A Preliminary Report on the Skeletal Remains from the Spanish Ship *Nuestra Senora de Atocha*  
 Field Museum of Natural History
- Robb Report 2010  
 "21 Ultimate Gifts: The Lost Vessel", Margarita Gold Chalice
- Schneider, Janet M., Susan T. Lubowsky and R. Duncan Mathewson III ( )  
 "Shipwrecked 1622, The Lost Treasure of Philip IV"  
 Catalog for the Queens Museum
- Schwicker, W. 1987  
 Timbers of the *Atocha*  
 in Atocha Archaeology Symposium  
 Society for Historical Archaeology / Conference on Underwater Archaeology  
 January 9  
 Savannah, GA
- Sinclair, J. 1987  
 Images in Silver: A Glance at the Merging of Hispanic and Peruvian Artistic Traditions  
 in Atocha Archaeology Symposium  
 Society for Historical Archaeology I Conference on Underwater Archeology  
 January 9  
 Savannah, GA

\_\_\_\_\_( )  
Edged Weapons of the *Nuestra Senora de Atocha*

Smalley, Jinky 1992  
Analysis of 1622 Gold Bullion

The New Yorker Magazine 2015  
Dept. of Fathoms, September 7, 2015 Issue  
"Pieces of Eight"  
By Ian Frazier

Tkakjian, P. ( )  
The Anchors of the 1622 Spanish Galleons *Atocha* and *Santa Margarita*

Treasure Salvors, Inc. 1980  
"Spanish Fleet, The 1622 Treasure of the *Nuestra Senora de Atocha* and *Santa Margarita*"  
Catalog

\_\_\_\_\_  
1981  
"The Treasure of 1622"  
Catalog

Zachurchuk, W. 1985  
*Atocha* Structural Analysis

### III. Special Reports

Bernard, Kathleen M., Eugene Lyon and R. Duncan Mathewson III  
(In Preparation)  
"Preliminary Archaeological Investigations of San Martin: A Spanish Galleon Lost off the East Coast of Florida in 1618"  
Florida Anthropologist

Clyne, P. 1983  
"Use of Grids and Photo - Trac on the *Santa Margarita* Site"  
Key West, FL

Jones, S. 1983  
"'X' Marks the Spot: How Improving Technology Helps Locate Ancient Spanish Galleons"  
Key West, FL

Marken, M. 1986  
*Ceramics from the *Nuestra Senora de Atocha* - Wrecked 1622; Booklet*  
Key West, FL

Mathewson, R. D. 2000  
"Archaeological Overview of Surveys and Excavations on the Lost Spanish Galleon Sites of the 1622 Treasure Fleet"  
Submitted to Florida Keys National Marine Sanctuary

Taylor, H. 1985  
*Cleaning of the *Atocha* Coins*  
Key West, FL

IV. Films, Television Shows, Documentaries, Radio, Videos

- BBC World Service (Radio)  
"Outlook: Our Hunt for Sunken Spanish Gold" 2016
- Treasure Salvors film 1966  
"Treasure Trove of the Century"
- Treasure Salvors film 1968  
"Treasure Salvors of the Florida Keys"
- Mathewson, R.D. 1996  
"Pieces of the Past: Searching for Underwater Treasure- - Science Module Component  
Delta Education Inc.  
Nashua, NH
- Kane, D. 1976  
National Geographic Film Special Treasure  
Educational Division
- Maxon, N. 1985  
Treasure  
National Geographic Film Special
- 
- \_\_\_\_\_1986  
Dreams of Gold
- A&E History Channel Television  
"The Search for the Atocha" (DVD 2005) 1998  
"Deep Sea Detectives – Treasure Hunt: Search for the Atocha" 1998
- Travel Channel Television  
"Best Places to Find Cash & Treasure" 2007  
"Caribbean Pirate Treasure" with Phillippe & Ashlan Cousteau 2017  
"Caribbean Pirate Treasure" with Phillippe & Ashlan Cousteau 2018
- Arcadia Entertainment 2007  
"Go Deep"
- CBS4 Miami News 2016  
Marcelo Sanchez - Interview with Kim Fisher
- Detect America (Live Stream) 2018  
"A Legacy of Treasure – Speaking with the Mel Fisher Treasure Team"  
Fri, Jan 26 from 8:30 - 9:30pm EST
- NBC Television  
"The Today Show with Al Roker"  
Visit Mel Fisher's Treasures 2009
- "The Tonight Show with Jay Leno and Mo Rocca"  
Visit Mel Fisher's Treasures July 13, 2006
- NBC Channel 6 News  
"Treasure Hunters Find \$500k Ring at Atocha Wreck" 2011  
A crew from Mel Fisher's Treasures found the 10-karat emerald piece on Thursday  
By Janie Campbell  
Published at 1:57 PM EDT on Jun 25, 2011 | Updated at 2:02 PM EDT on Jun 25, 2011
- Fox Business Television  
"Strange Inheritance" 2015  
"Golden treasures valued near \$1M", News Interview with Kim Fisher Nov. 25, 2013

Fox Sun Sports Television  
 "Scuba Nation" Television  
     "Pirate Plunder" 2013  
     "Emerald City" 2014  
     "Today is the Day" 2015  
     "Into the Future" 2017  
     "Into the Future - Redux" 2018

Discovery Channel Television  
 "Coopers Treasure" 2017

National Geographic Television  
 "Drain the Oceans - Sunken Treasures" 2018

NOVA (UK documentary)  
 "Treasures of the Earth: Metals" 2016

Huffington Post Live (live radio)  
 The Quest for Buried Treasure – Host: Ricky Camillari, Interview with Kim Fisher 2015

Channel 10 News - WTSP  
 "Bobby-Lewis-On-The-Road"  
 Mel Fisher's family carries on his golden legacy: August, 2016

#### V. Education

Amundson, K. and S. McKinney 1987  
The Story of the Spanish Galleon *Nuestra Senora de Atocha*  
 Coloring Book with Poster Map  
 Key West, FL  
 Cobb Coin Co

Budde-Jones, K. 1993  
 Coins of the Lost Galleons (Booklet)  
 Key West, FL

Gibbons, G. 1988  
Sunken Treasure  
 New York, NY  
 Thomas Y. Crowell

McHaley, B. and W. Tucker 1991  
Mel Fisher: The World's Greatest Treasure Hunter  
 Key West, FL  
 Terrell Publishing

Mathewson, R. D. 1996 a  
An Interdisciplinary Middle School Module in Marine Science and Archaeology: "If Shipwrecks Could Talk"  
 Ph.D. Dissertation  
 University of Michigan Microfilm Library

\_\_\_\_\_ 1996 b  
"If Shipwrecks Could Talk"  
 Interdisciplinary Science Module Grades 6-6  
 Nashua, NH  
 Delta Education, Inc.

O'Byrne-Pelham, F. and B. Balcer 1989  
The Search for the *Atocha* Treasure  
 Minneapolis, MN  
 Dillion Press, Inc.

Sullivan, G.1987  
Treasure Hunt  
New York, NY  
Henry Holt and Company

Super Magazine 7 2009  
An elementary school level text book  
Published by The Rowland Reading Foundation

\_\_\_\_\_ 2016  
2<sup>nd</sup> Edition  
An elementary school level text book  
Published by Zaner-Bloser

Tomblin, Marian (novelist and Florida historian) ( )  
Children's Book: "A chronicle of the youth of famed treasure hunter Mel Fisher"

## VI. Major Traveling Exhibitions

*Atocha* Treasure Exhibit; Cape Coral, Florida, June 1975

*Atocha* Treasure Exhibit; Palm Beach, Florida, September 1975

*Atocha* Treasure Exhibit; Hilton Head, Georgia, January 1976

*Atocha* Treasure Exhibit; Atlanta, Georgia, March 1976

*Atocha* Treasure Exhibit; National Geographic Society, Explorers Hall, Washington, D.C., June 1976

*Atocha* Treasure Exhibit; Omni International Hotel, Miami Florida, December, 1976

*Atocha* Treasure Exhibit; Harbourfront, Toronto, Canada, June 1979

*Atocha* Treasure Exhibit; San Diego, California, January, 1981

Shipwrecked, 1622; National Geographic Society, Explorers Hall, Washington, D.C., July 22, 1981 - September 13, 1981

*Atocha* Treasure Exhibit; San Francisco, California, September 1981

Shipwrecked:1622, The Lost Treasure of Comes to Queens, The Queens Museum, New York 1981 - November 29, 1981

The Sunken Treasure of the Spanish Fleet, 1622; The Jacksonville Museum of Arts and Sciences, December 1981 January 1982

The Lost Treasure of the Golden Galleons; East Martello Museum, Key West, Florida, February 6, 1982 - March 7, 1982

The Lost Treasure of the Golden Galleons; U.S. Customs House Call Room, Baltimore, Maryland, May 1, 1982 - July 11, 1982

Sunken Treasure Exhibit: Mallory Square Convention Center, Key West, Florida, October 22, 1982 - January 16, 1983. [1984 - 1997]

## VII. Permanent Exhibitions

The Pirate Treasure Ship and Museum of Sunken Treasure: The Golden Doubloon, Key West, Florida, December 25, 1971- 1978

The Lost Treasure of the Golden Galleons: Key West, Florida, 1978-present

Mel Fisher's Treasure Museum: 1322 U.S. Hwy One, Sebastian, Florida 1992-present

Treasures of the Sea Exhibit: Delaware Technical College- 1980- present

## VIII. Archival Documents

Relacion de lo Sucedido en los Galeones y Flota de Tierra firme (Spanish version)

A True Relation of That Which Lately Happened to the Great Spanish Fleet, and Galleons of Terra Firma in America (Contemporary English translation of Spanish original, 1623)

## IX. Collection of Contemporary Spanish Documents

- Collection of Documents, etc. by Navarrete/Tomo XII. #1371-Fols. 128-135. - "Nafragio de los galeones de Espana...."

- (31.) IG 1144 "Relation of the Voyage made by the Armada de la Carrera de las Indias under Command of the Marques de Cadereita in 1622.11

- AGI Ind. Gen. 1144 - "Relation of the Voyage made by the Armada de la Carrera de las Indias under Command of the Marques de Cadereita in 1622.11
- AGI Ind. Gen. 1144, 25 April 1621 - Relation of the Men going on the four galleons and two pataches going to T.F. in 1622
- AGI Contratacion 5173, 8 March 1622 - Casa to Consejo de Indias
- AGI Contratacion 5173, 3 May 1622 - Casa to Consejo
- AGI Contratacion 5101, 23 April 1622 - Marquesa de Cadereita to Casa President right after T.F. Galleons sailed for New World
- AGI Contratacion 5173, 19 April 1622 - Casa to Consejo.
- AGI Contratacion 5101, 16 April 1622 - Galleon tonnage
- AGI Ind. Gen. 1144, 17 October 1622 - Measurements of the ships going to be used in next year's T.F. Armada
- AGI Santo Domingo 132, 10 - December 1622 - Don Luis de Cordova in Havana to the King
- AGI Contratacion 5116, 12 December 1622 - Diego de Valle Alvarado from Havana to President of the Casa
- AGI Ind. Gen. 754, 12 December 1622 - Marques de Cadereita to King from Havana
- AGI Santo Domingo 132 - Gaspar de Vargas writing from Matacumbe on 9 January 1623 to the Marques de Cadereita in Havana
- AGI Santo Domingo 132, 10 January 1623 - Letter from the Marques de Cadereita
- AGI Santo Domingo 225, 30 January 1623 - Governor of Florida; Juan de Salinas to King
- AGI Contratacion 5020, 21 February 1631 - King to Casa
- British Museum, London, 1623 (Burney #3), "News of the Week of May 26, 1623-11
- AGI Ind. Gen. 1145, 4 June 1623 - Cadereita letter
- AGI Ind. Gen. 1145, 27 June 1623 - Dr. Salcedo to King
- AGI Contratacion 5019, 27 June 1623 - Consejo to Casa
- AGI Santo Domingo 101, 1623 - Loss of ship w/ bronze cannon
- AGI Santo Domingo 101,13 July 1623 - Governor of Havana to King
- AGI Santo Domingo 132, 15 November 1623 - Vargas to King
- AGI Contratacion 3041, "Papeles de Armada, de las arcs 1622 a 1624.11
- AGI Ind. Gen. 1148, 29 April 1625 - Lost cannon
- AGI Ind. Gen. 1151, 19 January 1627 – Administrators of Averia to King
- AGI Santo Domingo 132, 22 April 1627 - Francisco Nunez Melian to King
- AGI Esc. de Camera 1022 B, 1627.- Petition presented before the Consejo de Indias
- AGI Santo Domingo 132, Havana, 24 September 1628 Francisco NuEez de Melian letter
- AGI Santo Domingo 132, 18 October 1628 – Contador of Havana to the King
- AGI Ind. Gen. 756, 16 February 1629 - Consejo de Indias to the King
- AGI Santo Domingo 870, 27 March 1629 Francisco NuEez de Melian to the King
- AGI Santo Domingo 132, 5 October 1629 Francisco NuRez Melian to the King from Havana
- AGI Contratacion 2899 - Rosario info
- Bib. Nae., Sec. de Mans. Legajo 2468 - "Desc, Geographicas....' por Capt. Nicholas de Cardona, 1632. (Book with the 1622 wreck location chart)

- Dura, "Armada Espanola," Tomo N - Notes concerning 1622 Fleet disaster
- Chaunu, Tome V, pp. 50-60 - Data concerning the ships of the 1622 Fleets
- AGI Contratacion 5020, 2 August 1632 - King to Casa de Contratacion Officials
- AGI Ind. Gen. 761, 7 August 1640 - Consejo de Indias to the King
- AGI Contratacion 2988, "Relation of the equipment of artillery, arms, and munitions necessary" to arm the eight galleons and three pataches of the Armada ...
- AGI Santo Domingo 132, Ferrara contract to build *Atocha*.
- AGI Indiferente General 1144, List of artillery aboard the *Atocha* and *Santa Margarita*.
- AGI Indiferente General 2535 (c.1609) and AGI Contratacion 3859 (c.1616), Data concerning bronze gun types and cannonball weights
- AGI Contratacion 3008, Nails & fastenings used on 450-ton vessel
- AGI Contratacion 2211, Registry or manifest for the *Atocha*
- AGI Contratacion 818, *Santa Margarita* silver bar recovery
- AGI Contaduria 1394, Indiferente General 1146, and Contratacion 3003, Concerns 1622 tobacco lading.
- AGI Contratacion 3003 & 4449, and Indiferente General 754 (averia relacion of 1623), Concerns 1622 indigo lading
- AGI Contratacion 5116, "Relation of those drowned in the two galleons lost on 5 September 1622 in the Caveza de los Martires, thirty leagues from Havana."
- AGI EC 956, Concerns contraband on 1622 wrecks
  
- Biblioteca Nacional (Madrid)', MS 2468, fol.53, Map and description of Nicholas de Cardona worked with Vargas in 1623

#### X. Location Information & Misc. Site Data

- AGI IG 755, 1144, 1146, 1149, 1265, 1463, 1465, 1953, 2535, 2699
- AGI Mexico 469
- AGI CT 818, 2987, 2988, 4499, 5116, 5173, 5175, 5189
- AGI SD 101,132,134, 135.,233, 570
- AGI Escribania de Camara 76-A, 76-B, 1080-A, 1080-B
- AGI Contraduria 1112
- Miscellaneous documentary evidence concerning the 1622 Flota disaster, ships, and cargo (compiled, translated, and edited by Gene Lyon; AGI Contaduria 1112; Escribania de Camara 75-A; Santo Domingo 132,134,570; Contratacion 90-A, 2211, 2988, 3003, 4449; Indiferente General 754, 1144; Santa Fe 192)
- Shipwright's contract for four galleons (c.1616) including the *Nuestra Senora de Atocha* (translated by Dr. Gene Lyon); AGI Indiferente General 1869 (Qualities needed in Armada ships, c.1620-21) and Contratacion 90-A (List of supplies taken to Havana for Ferrara).
- AGI CT 4929, Miscellaneous documents concerning the construction of the Ascension (c.1590) and the rations, foodstuffs, containers and stowage of the Los Tres Reyes c.17th century (compiled and translated by Dr. Gene Lyon)

# 15 APPENDIX-8, INDEX OF PREVIOUS FKNMS PERMITS / CERTIFICATIONS

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## 15.1 ATOCHA FKNMS PERMIT / CERTIFICATION HISTORY LOG (UPDATE)

-  1997-12-22\_FKNMS-200-97\_Atocha Emerald City Permit.pdf
-  1998-08-31 Army Corp Letter - No ACE Permit Required on Atocha.pdf
-  1998-08-31 Army Corp Letter - No ACOE Permit Required on Atocha.pdf
-  1998-08-31 Atocha Permit FKNMS-075-98 08-31-1998 to 08-31-1999.pdf
-  1998-12-17 Atocha Permit FKNMS-075-98 Amendment-1 165-Line Extension.pdf
-  1999-08-25 Atocha Permit FKNMS-99-052 08-25-1999 to 12-31-2003.pdf
-  2000-03-31 Atocha Permit Amendment-1 Quicksands extension.pdf
-  2000-05-23 Atocha Permit Amendment-1 Admiralty rights letter.pdf
-  2001-10-03 Atocha Permit Amendment-2 added Par 2a.pdf
-  2002-10-07 Atocha Permit Kims request to excavate 4 hits.pdf
-  2002-10-07 Atocha Permit Kims request to excavate 4 hits\_fax.pdf
-  2002-10-09 Atocha Permit Amendment-3 excavate 4 hits.pdf
-  2003-01-23 Atocha Permit Amendment-4 excavate 2 hits.pdf
-  2004-01-05 Atocha Permit Amendment-5 01-01-2005 to 01-01-2007.pdf
-  2006-12-29 Atocha Permit FKNMS-2006-052 01-01-2007 to 11-30-2009.pdf
-  2009-11-06\_Atocha Permit Amendment-A1 11-06-2009 to 04-01-2010.pdf
-  2010-03-30 Atocha Permit Amendment-A2 04-01-2010 to 03-01-2013.pdf
-  2012-04-03 FKNMS John Halas Retirement notice & no night work.pdf
-  2012-06-21 Atocha Permit Amendment-A3 06-13-2012 to 03-01-2013.pdf
-  2013-03-08 Atocha Permit Amendment-A4 03-08-2013 to 04-01-2016 .pdf
-  2013-07-03 Atocha Permit Amendment-A5 07-03-2013 to 04-01-2016.pdf
-  2015-04-28 Atocha Permit Amendment-A6 04-28-2015 to 04-01-2016\_HAUV test area.pdf
-  2016-04-04 Atocha Permit FKNMS-2016-052 04-04-2016 to 04-01-2017 .pdf
-  2017-03-31 Atocha Permit Amendment-A1 03-31-2017 to 10-01-2017.pdf
-  2017-09-28 Atocha Permit Amendment-A2 09-29-2017 to 12-31-2017\_Irma Extension.pdf
-  2017-12-22 Atocha Permit Amendment-A3 12-22-2017 to 12-30-2018\_Bio Survey Extension.pdf
-  2019-02-04 Atocha Permit Amendment 02-04-2019 to 12-31-2019.pdf
-  2019-04-05 Atocha Permit Amendment-1 from date we sign to 12-31-2019.pdf
-  2019-12-27 Atocha Permit Amendment 1-1-2020 to 06-30-2020\_FKNMS-2019-052-A2\_Fisher.pdf
-  2020-06-12 Atocha Permit Extension to 7-31-2020\_FKNMS-2019-052-A3\_Fisher.pdf
-  2020-07-31 Atocha Permit Extension to 8-31-2020\_FKNMS-2019-052-A4\_Fisher\_Final.pdf
-  2020-08-31 Atocha Permit Extension to 9-30-2020\_FKNMS-2019-052-A5\_Fisher.pdf
-  2020-09-22 Atocha Permit Extension to 10-31-2020\_FKNMS-2019-052-A6\_Fisher.pdf
-  2020-10-30 Atocha Permit Extension to 11-30-2020\_FKNMS-2019-052-A7\_Fisher.pdf
-  2020-11-30 Atocha Permit Extension to 12-31-2020\_FKNMS-2019-052-A8\_Fisher.pdf
-  2020-12-30 Atocha Permit Extension to 1-26-2021\_FKNMS-2019-052-A9\_Fisher.pdf
-  2021-02-26 Atocha Permit Extension to 3-31-2021\_FKNMS-2019-052-A10\_Fisher.pdf
-  2022-01-26 Atocha-Margarita Certification 4-1-2021 to 3-31-2022\_FKNMS-2020-052-A1\_Fisher.pdf
-  2022-03-31 Atocha-Margarita Certification Amendment-A2 to 3-31-2023\_FKNMS-2020-052-A2\_Fisher.pdf
-  2022-05-26 Atocha-Margarita Certification Amendment-A3 to 3-31-2023\_FKNMS-2020-052-A3\_Fisher.pdf
-  2023-03-30 Atocha-Margarita Certification FKNMS-2020-052-A4\_Fisher.pdf
-  2024-03-26 Atocha-Margarita Certification FKNMS-2020-052-A5\_Fisher (w joint stipulation).pdf
-  2025-03-31 Atocha-Margarita Certification FKNMS-2020-052-A6\_Fisher (w joint stipulation).pdf

## 15.2 MARGARITA FKNMS PERMIT / CERTIFICATION HISTORY LOG (UPDATE)

-  1998-12-22 Margarita Permit FKNMS-1998-110 12-23-1998 to 12-22-2001 .pdf
  -  1998-12-23 Margarita Permit corrected page-4.pdf
  -  2001-12-17 Margarita Permit Amendment-A1 12-23-2001 to 12-23-04.pdf
  -  2002-03-18 Margarita Permit Amendment-A2 3-18-02 to 12-31-04.pdf
  -  2002-03-26 Margarita Permit Amendment-A2 correction.pdf
  -  2004-12-16 Margarita Permit Amendment-A3 12-23-2004 to 12-23-2007.pdf
  -  2005-01-01 Margarita Permit Amendment-A4 FKNMS SKIPPED THIS AMENDMENT NUMBER.pdf
  -  2007-08-15 Margarita Permit Amendment-A5 correction.pdf
  -  2007-12-14 Margarita Permit Amendment-A5 2007-12-23 to 2010-11-30.pdf
  -  2009-11-06 Margarita Permit Amendment-A6 11-05-2009 to 04-01-2011.pdf
  -  2010-06-16 Margarita Permit Amendment-A7 06-16-2010 to 04-01-2011.pdf
  -  2011-03-21 Margarita Permit Amendment-A8 04-01-2011 to 4-01-2014.pdf
  -  2012-04-03 FKNMS John Halas Retirement notice & no night work.pdf
  -  2012-06-21 Margarita Permit Amendment-A9 06-13-2012 to 04-01-2014.pdf
  -  2013-07-03 Margarita Permit Amendment-A10 07-03-2013 to 04-01-2014.pdf
  -  2014-04-09 Margarita Permit Amendment-A11 04-01-2014 to 04-01-2017.pdf
  -  2017-03-31 Margarita Permit Amendment-A12 03-31-2017 to 10-01-2017.pdf
  -  2017-09-28 Margarita Permit Amendment-A13 09-28-2017 to 12-31-2017.pdf
  -  2017-12-22 Margarita Permit Amendment-A14 12-22-2017 to 12-30-2018.pdf
  -  2019-02-04 Margarita Permit Amendmant 02-04-2019 to 12-31-2019\_FKNMS-2019-110\_Fisher.pdf
  -  2019-04-05 Margarita Permit Amendment-1 from date we sign to 12-31-2019.pdf
  -  2019-12-27 Margarita Permit Amendment 1-1-2020 to 06-30-2020 FKNMS-2019-110-A2\_Fisher.pdf
  -  2020-06-12 Margarita Permit Extension to to 7-31-2020\_FKNMS-2019-110-A3\_Fisher.pdf
  -  2020-07-31 Margarita Permit Extension to 8-31-2020\_FKNMS-2019-110-A4\_Fisher\_Final.pdf
  -  2020-08-31 Margarita Permit Extension to 9-30-2020\_FKNMS-2019-110-A5\_Fisher.pdf
  -  2020-09-22 Margarita Permit Extension to 10-31-2020\_FKNMS-2019-110-A6\_Fisher.pdf
  -  2020-10-30 Margarita Permit Extension to 11-30-2020\_FKNMS-2019-110-A7\_Fisher.pdf
  -  2020-11-30 Margarita Permit Extension to 12-31-2020\_FKNMS-2019-110-A8\_Fisher.pdf
  -  2020-12-30 Margarita Permit Extension to 1-26-2021\_FKNMS-2019-110-A9\_Fisher.pdf
  -  2021-02-26 Margarita Permit Extension to 3-31-2021\_FKNMS-2019-110-A10\_Fisher.pdf
  -  2022-01-26 Atocha-Margarita Certification 4-1-2021 to 3-31-2022\_FKNMS-2020-052-A1\_Fisher.pdf
  -  2022-03-31 Atocha-Margarita Certification Amendment-A2 to 3-31-2023\_FKNMS-2020-052-A2\_Fisher.pdf
  -  2022-05-26 Atocha-Margarita Certification Amendment-A3 to 3-31-2023\_FKNMS-2020-052-A3\_Fisher.pdf
  -  2023-03-30 Atocha-Margarita Certification FKNMS-2020-052-A4\_Fisher.pdf
  -  2024-03-26 Atocha-Margarita Certification FKNMS-2020-052-A5\_Fisher (w joint stipulation).pdf
-  2025-03-31 Atocha-Margarita Certification FKNMS-2020-052-A6\_Fisher (w joint stipulation).pdf

# 16 APPENDIX-9, ORIGINAL FKNMS ATOCHA PERMIT



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Florida Keys National Marine Sanctuary  
Upper Keys Region  
P.O. Box 1086  
Key Largo, FL 33037

December 22, 1997

Malvin A. Fisher  
Motivation, Inc.  
200 Greene St.  
Key West, FL 33040

Dear Mr. Fisher:

The Sanctuary staff and the Florida Division of Historical Resources have received your request for a permit to conduct recovery activities in the Florida Keys National Marine Sanctuary (FKNMS). Enclosed you will find permit number FKNMS-200 97 to recover emeralds from the Atocha site. However, this permit will not be valid until you obtain a US Army Corps of Engineers permit and provide us with a copy. Please contact Oswaldo Collazo in the regulatory branch in Jacksonville at (904) 232-1675.

You should notify the FKNMS Lower Region Office at (305) 292 0311 prior to conducting the recovery activities under this permit. The regional Sanctuary manager should be aware of your activities and schedule of cruises. In addition, the enclosed NOAA research flag must be flown from your vessel while conducting permitted activities to alert others that research is in progress. The flag must be returned when your permit expires.

Should you have any questions regarding this permit or National Marine Sanctuary permits in general, please contact me at (305) 852-7717, ext. 35, or Mr. John Halas at ext. 34. Thank you for your cooperation with the Florida Keys National Marine Sanctuary.

Sincerely,

Paul D. Moen  
Upper Keys Regional Manager

encl.

cc: B. Causoy, JHalas/FKNMS  
E. Golde, W. Torre.../SAD HQ  
O. Varner, M. Weiss/GCOS  
J. Miller/Florida Division of Historical Resources  
D. Boardman/ USACE  
J. Dougherty



PERMIT  
FKMMS-200-97

TO CONDUCT RECOVERY (§ 922.166(c)) ACTIVITIES ON A PRIVATELY OWNED VESSEL (THE ATOCHA) IN THE FLORIDA KEYS NATIONAL MARINE SANCTUARY

This recovery permit is issued in accordance with the National Marine Sanctuaries Act (NMSA), 16 USC 1431 et seq., implementing regulations (15 CFR Part 922), and the Florida Keys National Marine Sanctuary and Protection Act (FKNMSPA), PL 101-605, 16 U.S.C. 1433 note. All activities shall be conducted in accordance with those regulations, laws, and the management plan for the Florida Keys National Marine Sanctuary (FKMMS), however, activities which would otherwise be prohibited under § 922.163(a)(3), (4) and (9), may be conducted in strict accordance with the terms and conditions of this permit.

No deaccession/transfer permit (§ 922.166(d)) is required for recovery of the emeralds from the Atocha as NOAA does not dispute that the permittee Motivation Inc. and President Mel Fisher have title to the Atocha and its cargo. Execution of this permit shall not be taken as a waiver of such title or of any related preexisting rights of access which may still be valid under Federal Admiralty Law.

Subject to the terms and conditions of this permit, Motivation Inc. and Melvin A. Fisher as President are hereby granted permission to conduct recovery activities within the FKMMS. All activities are to be conducted in accordance with the terms and conditions of this permit, provided however, if there are any conflicts between your permit request and the terms and conditions of this permit, the terms and conditions of this permit and the above laws shall be controlling.

In addition to the above terms and conditions, the following terms and conditions apply to this permit:

**Special Conditions**

1. This permit is effective as of the approval signature and date shown at the end of this permit, and will wa'll remain in effect for one year.
2. This permit may be extended for subsequent years, provided that Motivation, Inc. continues to hold valid admiralty rights to Atocha and complies with all terms and conditions of this permit. An application for extending this permit must be submitted at least 60 days prior to the expiration date of this permit to the individuals listed in General Condition #4.

3. The following activity is allowed under this permit:

Airlifting, using a suction dredge, of sediments and associated emeralds within an area limited to a 1500 yard radius around the geographic position of the primary Atocha site, commonly known as "Emerald City", located at the following coordinates: lat. (b) (4) seconds N; (b) (4)

4. Alteration of the seabed and discharge of sediments shall be conducted in a manner that does not destroy, harm, or injure seagrass, hardbottom or coral reef communities. The Florida Department of Environmental Protection staff, may accompany FKNMS staff to observe the dredging and discharging activities authorized under this permit and any Army Corps of Engineers permit to determine whether additional conditions are required to address water quality impacts. If FKNMS and FDEP staff determine that the activities are resulting in injury to, loss, or destruction of Sanctuary resources or qualities, including water quality, FKNMS staff will require permittee to cease operations until such time that the permittee alleviates the problem to the satisfaction of FKNMS in consultation with FDEP and ACOE, and FKNMS modifies this permit accordingly. At a minimum, environmental restoration must be performed by the permittee for any injury caused by the conduct of activities carried out under this permit.
5. The use of prop-wash deflectors is expressly prohibited.
6. This permit is granted with the presumption that no intact archaeological deposits exist at the point where emeralds are permitted to be recovered. However, other archaeological deposits may exist elsewhere within the federal admiralty court order area. This permit does not extend to recovery of such remains. NOAA and the State of Florida will cooperate with the permittee on additional permits to cover such remains if requested.

#### General Conditions

1. All persons participating in the permitted activity shall be under the supervision of Motivation, Inc., the permittee, as represented by Mel Fisher, President, and the permittee shall be responsible for any violation of this permit, the NMSA, regulations thereunder, and the FKNMSPA. The permittee shall assure that all persons performing activities under this permit are fully aware of the conditions herein. Prior to conducting activities under this permit, the permittee must send written notice to NOAA as to the designee in charge of field operations, as well as a list of those employees, contractors, agents and others who may be conducting activities under this permit.

2. This permit is not valid until the permittee submits the following to NOAA: a copy of a list identifying the Motivation employee or contractor which is responsible for operations under this permit; a list of employees and contractors which will be conducting activities under this permit; and the vessel to be used.
3. NOAA reserves the right to have an observer(s) aboard the permittee's vessel during all activities authorized by this permit. The NOAA Observer(s) may document the permittee's activities for the purpose of determining whether the permitted activities are conducted in accordance with the terms and conditions of this permit and the applicable statutes and regulations. The NOAA Observer(s) may also provide limited advice and technical assistance, if requested by the permittee. The NOAA Observer(s) will not be present for the purpose of safety of permittees, nor for the purpose of approval of activities not specifically authorized by this permit.
4. The permittee shall maintain a cruise log. The log shall contain a daily description of cruise activities including geographic locations (GPS coordinates) and brief descriptions of who conducted which activities. Within 3 days of the end of each cruise, the permittee shall submit copies of the cruise log to the person listed below:

Mr. John Halas  
Resource Manager, NOAA/PKNMS  
P.O. Box 1083  
Key Largo, FL 33037

5. The permittee shall also provide a final report, either 30 days after the expiration of the permit or 30 days prior if a renewal is desired, that describes all of the recovery activities conducted under this permit. The report should include the following information: a site map, description of artifacts found and their location in the site map, and copies of photos of tagged artifacts where appropriate or after recovery. In addition, copies of all written reports, publications and videotapes resulting from the activities described in this permit will be submitted to Mr. Halas. Except for reports produced by the permittee, all intellectual property rights will remain with the producer of the publication or videotape.
6. A Sanctuary research flag shall be flown from all vessels under this permit while conducting permitted activities in the Sanctuary. A flag is enclosed with this permit. If additional flags are needed, they can be obtained from the lower keys regional office in Key West (305-292-0311).

7. This permit is non-transferable and shall be carried by the permittee at all times while engaging in any activity authorized by this permit.
8. This permit may be amended under appropriate circumstances. Any request for modification should be submitted to the individuals listed in General Condition #4.
9. This permit may be suspended, revoked, or modified for violation of the terms and conditions of this permit, the regulations at 15 CFR Part 922, the NMSA, the FKNMSPA, or for other good cause shown. Such action shall be communicated in writing to the applicant or permittee, and shall set forth the reason(s) for the action taken.
10. This permit may be suspended, revoked or modified if requirements from previous permits or authorizations issued to the permittee are not fulfilled by their due date. Permit or authorization applications for any future activities in the Sanctuary by the permittee may not be considered if the permittee is out of compliance with the conditions of this permit.
11. If the permittee or any person acting under his supervision conducts, or causes to be conducted, any activity in the Sanctuary not in accordance with the terms and conditions set forth in this permit, or who otherwise violates such terms and conditions, the permittee shall be subject to civil penalties, forfeiture, costs, and all other remedies under the NMSA, the FKNMSPA, and the regulations at 15 CFR Part 922.
12. Any publications and/or reports resulting from these activities produced by the permittee shall include the notation that the activity was conducted under National Marine Sanctuary Permit FKNMS-200-97 and be sent to the individuals listed in General Condition #4.
13. This permit does not relieve the permittee of responsibility to comply with all other applicable Federal, State and local laws and regulations, and this permit is not valid until all other necessary permits and/or authorizations are obtained.
14. Any question or interpretation of any term or condition of this permit shall be resolved by the Director of the Office of Ocean and Coastal Resource Management, NOAA. However, this permit may not be interpreted as a waiver of any of Motivation, Inc.'s preexisting rights under Federal admiralty law, or as a waiver of Motivation Inc.'s rights to challenge the applicability or validity of the Sanctuary regulations and NOAA's actions related thereto. In the event there are questions or a dispute about the permit conditions and the underlying statutes, or regulatory prohibitions, the terms and conditions which permit the conduct of prohibited

activities should be construed narrowly; while the underlying statutes, regulations and management plan should be interpreted broadly. In the event there is a question of interpretation as to whether a specific activity is within the scope of permitted activities, the permittee should contact NOAA and request clarification prior to conducting such activity.

15. This permit supercedes any previous permits issued by NOAA/SRD to permittees Melvin Fisher, Motivation Inc, or Salvors Inc. All such previous permits are null and void.

This permit is effective as of the approval signature and date shown below.

Approved: Paul D. Moen Date: 12/22/97

Paul D. Moen, Lieutenant Commander/NOAA  
Manager, Upper Keys Region/FKNMS

# National Marine Sanctuary Program

Florida Keys



Upper Region Office  
P.O. Box 1083  
Key Largo, Florida 33037

PH: (305) 852-7717  
Fax: (305) 853-0877

TO: Gary Randall / Pat Clyde  
FROM: John Halas  
SUBJECT: Atacha Permit  
DATE: 8/31/98

NOTE: There were a few i's to dot & T's to cross  
use this version. I will bring the original tomorrow  
*John*

P.S. I spoke with Chuck Schaeple - few minutes ago. He is putting together a letter for me stating that the Corps has exercised jurisdiction for treasure salvage excavation (unilobing & unilifting) in federal waters. I will send you or bring a copy when I receive it.  
*John*

This transmission contains 7 pages.



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE

PERMIT  
FKNMS - 075-98

**TO CONDUCT RECOVERY ACTIVITIES ON A PRIVATELY OWNED VESSEL IN  
THE FLORIDA KEYS NATIONAL MARINE SANCTUARY**

This research and recovery permit is issued in accordance with the National Marine Sanctuaries Act (NMSA), 16 USC 1431 *et seq.*, implementing regulations (15 CFR Part 922), and the Florida Keys National Marine Sanctuary and Protection Act (FKNMSPA), PL. 101-605, 16 U.S.C. 1433 *note*. All activities shall be conducted in accordance with those regulations, laws, and the management plan for the Florida Keys National Marine Sanctuary (FKNMS), however, activities which would otherwise be prohibited under § 922.163(a)(3), (4) and (9), may be conducted in strict accordance with the terms and conditions of this permit.

No deaccession/transfer permit (§ 922.166(d)) is required for recovery of *Atocha* cargo as NOAA does not dispute that the permittee Motivation Inc. and President Melvin A. Fisher have title to the *Atocha* and its cargo. Execution of this permit shall not be taken as a waiver of such title or of any related preexisting rights of access which may still be valid under Federal Admiralty Law.

Subject to the terms and conditions of this permit, Motivation Inc. and Melvin A. Fisher as President are hereby granted permission to conduct recovery activities within the FKNMS. All activities are to be conducted according to the application and reports submitted to the Florida Keys National Marine Sanctuary on June 23, July 24, and August 13, 1998, incorporated by reference to this permit, and the terms and conditions of this permit. If there are any conflicts between such application and reports and the terms and conditions of this permit, the terms and conditions of this permit and the above laws shall be controlling.

In addition to the above terms and conditions, the following terms and conditions apply to this permit. No further disturbance of the cultural or living resources of the Sanctuary is permitted.

**Special Conditions**

1. This permit is effective as of the approval signature and date shown at the end of this permit, and will remain in effect for one year.
2. The permittee is authorized to conduct excavation and recovery of the *Atocha* track, all of which lies in Federal waters, utilizing airlift suction dredges and propwash deflectors as follows:
  - a. All excavation and recovery activities shall be conducted within 600 yards of the axis connection previously excavated *Atocha* archaeological deposits between the *Atocha* main site (b) (4) and the nine bronze cannon site (b) (4) (b) (4) as depicted in the survey and inventory final report submitted to the FKNMS and located within the boundaries of the *Atocha* order of final judgment.
  - b. Suction dredges and propwash deflectors shall not be used at the following locations known to contain sensitive coral community patch reef habitats:



PERMIT  
FKNMS - 075-98  
page 3

5. Propwash deflectors or suction dredges shall not be used during times that current or sea conditions cause excavation sediment plumes to carry over any known patch reefs. NOAA believes the use of propwash deflectors or blowers as a method of excavation is potentially harmful to the resources, but may not be damaging in controlled situations.
6. This permit does not extend to recovery of non-*Atocha* archaeological deposits. If the permittee wishes to recover non-*Atocha* archaeological deposits, he must notify the individual listed in #4 immediately and must submit a separate permit application to NOAA.
7. This permit may be extended for subsequent years, provided that permittee continues to hold valid admiralty rights to *Atocha* and complies with all terms and conditions of this permit. An application for extending this permit must be submitted at least 60 days prior to the expiration date of this permit to the individual listed in General Condition #4.

**General Conditions**

1. All persons participating in the permitted activity shall be under the supervision of Motivation Inc., the permittee, as represented by Melvin A. Fisher, President, and the permittee shall be responsible for any violation of this permit, the NMSA, regulations thereunder, and the FKNMSPA. The permittee shall assure that all persons performing activities under this permit are fully aware of the conditions herein. Prior to conducting activities under this permit, the permittee must send written notice to NOAA as to the designee in charge of field operations, as well as a list of those employees, contractors, agents and others who may be conducting activities under this permit.
2. This permit is not valid until the permittee submits the following to NOAA: a copy of a list identifying the Motivation employee or contractor which is responsible for operations under this permit; a list of employees and contractors which will be conducting activities under this permit; and the vessel to be used.
3. NOAA reserves the right to have an observer(s) aboard the permittee's vessel during all activities authorized by this permit. The NOAA Observer(s) may document the permittee's activities for the purpose of determining whether the permitted activities are conducted in accordance with the terms and conditions of this permit and the applicable statutes and regulations. The NOAA Observer(s) may also provide limited advice and technical assistance, if requested by the permittee. The NOAA Observer(s) will not be present for the purpose of the safety of the permittee, nor for the purpose of approval of activities not specifically authorized by this permit.
4. The permittee shall maintain a cruise log. The log shall contain a daily description of cruise activities including geographic locations (GPS coordinates) and brief descriptions of who conducted which activities. Within 3 days after the end of each cruise, the permittee shall submit copies of the cruise log to the person listed below:

Mr. John Halus  
Resource Manager, NOAA/FKNMS  
P.O. Box 1083  
Key Largo, FL 33037  
(305) 852-7717 x34

PERMIT  
FKNMS - 075-98  
page 4

5. The permittee shall also provide a final report, either 30 days after the expiration of the permit or 30 days prior if a renewal is desired, that describes all of the recovery activities conducted under this permit. The report should include the following information: a site map, description of artifacts found and their location in the site map, and copies of photos of tagged artifacts where appropriate or after recovery. In addition, copies of all written reports, publications and videotapes resulting from the activities described in this permit will be submitted to the individual listed in general condition #4. Except for reports produced by the permittee, all intellectual property rights will remain with the producer of the publication or videotape or other valid holder of such rights.
6. A NOAA flag shall be flown from all vessels under this permit while conducting permitted activities in the Sanctuary. A flag is enclosed with this permit. If additional flags are needed, they can be obtained from the lower keys regional office in Key West (305-292-0311).
7. This permit is non-transferable and shall be carried by the permittee at all times while engaging in any activity authorized by this permit.
8. This permit may be amended under appropriate circumstances. Any request for modification should be submitted to the individual listed in General Condition #4.
9. This permit may be suspended, revoked, or modified for violation of the terms and conditions of this permit, the regulations in 15 CFR Part 922, the NMSA, the FKNMSPA, or for other good cause shown. Such action shall be communicated in writing to the applicant or permittee, and shall set forth the reason(s) for the action taken.
10. This permit may be suspended, revoked or modified if requirements from previous permits or authorizations issued to the permittee are not fulfilled by their due date. Permit or authorization applications for any future activities in the Sanctuary by the permittee may not be considered if the permittee fails to comply with conditions of this permit.
11. If the permittee or any person acting under his supervision conducts, or causes to be conducted, any activity in the Sanctuary not in accordance with the terms and conditions set forth in this permit, or who otherwise violates such terms and conditions, the permittee or other such other person shall be subject to civil penalties, forfeiture, costs, and all other remedies under the NMSA, the FKNMSPA, and the regulations at 15 CFR Part 922.
12. Any publications and/or reports resulting from these activities produced by the permittee shall include the notation that the activity was conducted under National Marine Sanctuary Permit FKNMS-075-98 and be sent to the individual listed in General Condition #4.
13. This permit does not relieve the permittee of responsibility to comply with all other applicable Federal, State and local laws and regulations, and this permit is not valid until any other necessary permits and/or authorizations are obtained. Copies of such permits and authorizations shall be submitted to the individual listed in general condition # 4.

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FKNMS - 075-98  
page 5

- 14. Any question or interpretation of any term or condition of this permit shall be resolved by the Director of the Office of Ocean and Coastal Resource Management, NOAA. In the event there are questions or a dispute about the permit conditions and the underlying statutes, or regulatory prohibitions, the terms and conditions which permit the conduct of prohibited activities should be construed narrowly; while the underlying statutes, regulations and management plan should be interpreted broadly. In the event there is a question of interpretation as to whether a specific activity is within the scope of permitted activities, the permittee should contact NOAA and request clarification prior to conducting such activity.
- 15. This permit supersedes any previous permits issued by NOAA/SRD to permittee Melvin A. Fisher, Motivation Inc., or Salvors Inc. All such previous permits are null and void.

This permit is effective as of the approval signature and date shown below.

Approved: *Dave Savage* Date: 8/21/98  
 Dave Savage, Lieutenant Commander/NOAA  
 Manager, Upper Keys Region/FKNMS

# 17 APPENDIX-10, ORIGINAL FKNMS MARGARITA PERMIT



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE

Florida Keys National Marine Sanctuary  
Upper Keys Region  
P.O. Box 1083  
Key Largo, FL 33037

December 22, 1998

Mr. Kim Fisher  
Motivation, Inc.  
200 Greene St.  
Key West, FL 33040

Dear Mr. Fisher:

The Sanctuary staff and the Florida Division of Historical Resources have received your request for a permit to conduct recovery activities in the Florida Keys National Marine Sanctuary (FKNMS). Enclosed you will find permit number FKNMS-110-98 to conduct recovery operations. This permit may not be interpreted as a waiver of any of Motivation Inc.'s preexisting rights under Federal Admiralty Law, or as a waiver of Motivation Inc.'s rights to challenge the applicability or validity of the Sanctuary regulations and NOAA's actions related thereto.

You should notify the FKNMS Lower Region Office at (305) 292-0311 prior to conducting the recovery activities under this permit. Mr. G. P. Schmahl, the regional Sanctuary manager, should be aware of your activities and schedule of cruises. In addition, the enclosed NOAA flag must be flown from your vessel while conducting permitted activities to alert others that permitted activities are in progress. The flag must be returned when your permit expires.

Should you have any questions regarding this permit or National Marine Sanctuary permits in general, please contact me at (305) 852-7717, extension 35, or Mr. John Halas at extension 34. Thank you for your cooperation with the Florida Keys National Marine Sanctuary.

Sincerely,

Dave Savage  
Upper Keys Regional Manager

Encl.

cc: B. Causey, J. Halas, G. P. Schmahl/FKNMS  
B. Terrel/SRD HQ  
M. Freeman/GCOS  
J. Miller/Florida Division of Historical Resources





U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE

PERMIT  
FKNMS - 110-98

**TO CONDUCT RECOVERY ACTIVITIES ON A PRIVATELY OWNED VESSEL IN  
THE FLORIDA KEYS NATIONAL MARINE SANCTUARY**

This research and recovery permit is issued in accordance with the National Marine Sanctuaries Act (NMSA), 16 USC 1431 *et seq.*, implementing regulations (15 CFR Part 922), and the Florida Keys National Marine Sanctuary and Protection Act (FKNMSPA), PL 101-605, 16 U.S.C. 1433 note. All activities shall be conducted in accordance with those regulations, laws, and the management plan for the Florida Keys National Marine Sanctuary (FKNMS), however, activities which would otherwise be prohibited under § 922.163(a)(3), (4) and (9), may be conducted in strict accordance with the terms and conditions of this permit.

No deaccession/transfer permit (§ 922.166(d)) is required for recovery of *Margarita* cargo as NOAA does not dispute that the permittee Motivation Inc. and President Kim Fisher have title to the *Margarita* and its cargo. Execution of this permit shall not be taken as a waiver of such title or of any related preexisting rights of access which may still be valid under Federal Admiralty Law.

Subject to the terms and conditions of this permit, Motivation Inc. and Kim Fisher as President are hereby granted permission to conduct recovery activities within the FKNMS. All activities are to be conducted according to the application and reports submitted to the Florida Keys National Marine Sanctuary on October 29, 1998, incorporated by reference to this permit, and the terms and conditions of this permit. If there are any conflicts between such application and reports and the terms and conditions of this permit, the terms and conditions of this permit and the above laws shall be controlling.

In addition to the above terms and conditions, the following terms and conditions apply to this permit. No further disturbance of the cultural or living resources of the Sanctuary is permitted.

**Special Conditions**

1. This permit is effective as of the approval signature and date shown at the end of this permit, and will remain in effect for three years.
2. The permittee is authorized to conduct excavation and recovery of the *Margarita* plot, all of which lies in Federal waters, utilizing airlift suction dredges and propwash deflectors as follows within the rectangle delineated by the following coordinates:

1) (b) (4)

- a. All excavation and recovery activities shall be conducted as depicted in the survey and inventory final report submitted to the FKNMS and located within the boundaries of the *Margarita* order of final judgment.

PERMIT  
FKNMS - 110-98  
page 2

- b. Airlifting and propwash deflectors shall not be used on or within 25 meters of any seagrass bed, hard bottom community, or coral community that may be encountered. If any seagrass bed, hard bottom community, or coral community is encountered the permittee shall notify the individual listed in general condition #4 and provided the exact coordinates of the natural resource in question.
- c. The permittee shall use only the minimum amount of engine RPM necessary to remove overburden without harming the natural and underlying archaeological resources and shall follow the twin prop-wash deflector tables, attached to this permit and made a part hereof, and in no case shall the permittee exceed the maximum RPM and time combination for any depth listed in the tables.
3. If the *Margarita* trail leads beyond the designated 1.5 square mile primary area within the court awarded area and permittee wishes to excavate this additional area, the permittee shall contact the individual listed in general condition #4 of this permit so that a natural resources assessment can be conducted. Additional required survey and inventory documentation must accompany the request before the permit may be amended to cover the new area.
4. Alteration of the seabed and discharge of sediments shall be conducted in a manner that does not destroy, harm, or injure seagrass, hardbottom or coral reef communities. The Florida Department of Environmental Protection (FDEP) and U.S. Army Corps of Engineers (ACOE) staffs may accompany FKNMS staff to observe excavation and recovery activities authorized under this permit to determine whether additional conditions are required to address water quality impacts. If FKNMS, ACOE and FDEP staff determine that the activities are resulting in injury to, loss, or destruction of Sanctuary resources or qualities, including water quality, FKNMS staff will require permittee to cease operations until such time that the permittee alleviates the problem to the satisfaction of FKNMS in consultation with FDEP and ACOE, and FKNMS modifies this permit accordingly. At a minimum, environmental restoration must be performed by the permittee for any injury caused by the conduct of activities carried out under this permit.
5. Propwash deflectors or suction dredges shall not be used during times that current or sea conditions cause excavation sediment plumes to carry over any known patch reefs. NOAA believes the use of propwash deflectors or blowers as a method of excavation is potentially harmful to the resources, but may not be damaging in controlled situations.
6. This permit does not extend to recovery of non-*Margarita* archaeological deposits. If the permittee wishes to recover non-*Margarita* archaeological deposits, he must notify the individual listed in #4 immediately and must submit a separate permit application to NOAA.
7. This permit may be extended for subsequent years, provided that permittee continues to hold valid admiralty rights to *Margarita* and complies with all terms and conditions of this permit. An application for extending this permit must be submitted at least 60 days prior to the expiration date of this permit to the individual listed in General Condition #4.

PERMIT  
FKNMS - 110-98  
page 3

General Conditions

1. All persons participating in the permitted activity shall be under the supervision of Motivation, Inc., the permittee, as represented by Kim Fisher, President, or designee, and the permittee shall be responsible for any violation of this permit, the NMSA, regulations thereunder, and the FKNMSPA. The permittee shall assure that all persons performing activities under this permit are fully aware of the conditions herein. Prior to conducting activities under this permit, the permittee must send written notice to NOAA as to the designee in charge of field operations, as well as a list of those employees, contractors, agents and others who may be conducting activities under this permit.
2. This permit is not valid until the permittee submits the following to NOAA: a copy of a list identifying the Motivation employee or contractor which is responsible for operations under this permit; a list of employees and contractors which will be conducting activities under this permit; and the vessel to be used.
3. NOAA reserves the right to have an observer(s) aboard the permittee's vessel during all activities authorized by this permit. The NOAA Observer(s) may document the permittee's activities for the purpose of determining whether the permitted activities are conducted in accordance with the terms and conditions of this permit and the applicable statutes and regulations. The NOAA Observer(s) may also provide limited advice and technical assistance, if requested by the permittee. The NOAA Observer(s) will not be present for the purpose of safety of permittee, nor for the purpose of approval of activities not specifically authorized by this permit.
4. The permittee shall maintain a cruise log. The log shall contain a daily description of cruise activities including geographic locations (GPS coordinates) and brief descriptions of who conducted which activities. Within 3 days after the end of each month, the permittee shall submit copies of the cruise logs for each vessel for the month to the person listed below:  
  
Mr. John Halas  
Resource Manager, NOAA/FKNMS  
P.O. Box 1083  
Key Largo, FL 33037  
(305) 852-7717 x34
5. The permittee shall also provide a final report, either 30 days after the expiration of the permit or 30 days prior if a renewal is desired, that describes all of the recovery activities conducted under this permit. The report should include the following information: a site map, description of artifacts found and their location in the site map, and copies of photos of tagged artifacts where appropriate or after recovery. In addition, copies of all written reports, publications and videotapes resulting from the activities described in this permit will be submitted to the individual listed in general condition #4. Except for reports produced by the permittee, all intellectual property rights will remain with the producer of the publication or videotape or other valid holder of such rights.
6. A NOAA flag shall be flown from all vessels under this permit while conducting permitted activities in the Sanctuary. A flag is enclosed with this permit. If additional flags are needed, they can be obtained from the lower keys regional office in Key West (305-292-0311).

PERMIT  
FKNMS - 110-98  
page 4

7. This permit is non-transferable and shall be carried by the permittee at all times while engaging in any activity authorized by this permit.
8. This permit may be amended under appropriate circumstances. Any request for modification should be submitted to the individual listed in General Condition #4.
9. This permit may be suspended, revoked, or modified for violation of the terms and conditions of this permit, the regulations in 15 CFR Part 922, the NMSA, the FKNMSPA, or for other good cause shown. Such action shall be communicated in writing to the applicant or permittee, and shall set forth the reason(s) for the action taken.
10. This permit may be suspended, revoked or modified if requirements from previous permits or authorizations issued to the permittee are not fulfilled by their due date. Permit or authorization applications for any future activities in the Sanctuary by the permittee may not be considered if the permittee fails to comply with conditions of this permit.
11. If the permittee or any person acting under his supervision conducts, or causes to be conducted, any activity in the Sanctuary not in accordance with the terms and conditions set forth in this permit, or who otherwise violates such terms and conditions, the permittee or other such other person shall be subject to civil penalties, forfeiture, costs, and all other remedies under the NMSA, the FKNMSPA, and the regulations at 15 CFR Part 922.
12. Any publications and/or reports resulting from these activities produced by the permittee shall include the notation that the activity was conducted under National Marine Sanctuary Permit FKNMS-110-98 and be sent to the individuals listed in General Condition #4.
13. This permit does not relieve the permittee of responsibility to comply with all other applicable Federal, State and local laws and regulations, and this permit is not valid until any other necessary permits and/or authorizations are obtained.
14. Any question or interpretation of any term or condition of this permit shall be resolved by the Director of the Office of Ocean and Coastal Resource Management, NOAA. However, this permit may not be interpreted as a waiver of any of Motivation, Inc.'s preexisting rights under Federal Admiralty law, or as a waiver of Motivation Inc.'s rights to challenge the applicability or validity of the Sanctuary regulations and NOAA's actions related thereto. In the event there are questions or a dispute about the permit conditions and the underlying statutes, or regulatory prohibitions, the terms and conditions which permit the conduct of prohibited activities should be construed narrowly; while the underlying statutes, regulations and management plan should be interpreted broadly. In the event there is a question of interpretation as to whether a specific activity is within the scope of permitted activities, the permittee should contact NOAA and request clarification prior to conducting such activity.
15. This permit supersedes any previous permits issued by NOAA/SRD to permittee Kim Fisher, Motivation Inc., or Salvors Inc. All such previous permits are null and void.

This permit is effective as of the approval signature and date shown below.

Approved:  Date: 12/23/98

Dave Savage, Lieutenant Commander/NOAA  
Manager, Upper Keys Region/FKNMS

## 18 APPENDIX-11, 2024 ADJUDICATION OF TITLE ORDERS

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Case 1:75-cv-01416-AHS Document 707 Entered on FLSD Docket 06/17/2025 Page 1 of 3

UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF FLORIDA  
KEY WEST DIVISION

CASE NO. 1:75-01416-CIV-SINGHAL

MOTIVATION, INC.,

Plaintiff,

vs.

THE UNIDENTIFIED, WRECKED, AND  
ABANDONED SAILING VESSEL,  
ATOCHA, ETC.,

Defendant in rem.

\_\_\_\_\_/

### ORDER<sup>1</sup>

**THIS CAUSE** comes before the Court upon Plaintiff's Motion for Order Adjudicating Title to Articles of Salvage and Report of On-Going Salvage Operations (the "Motion") (DE [701]) and the Court, having retained jurisdiction to protect the valid ownership and salvage operations of Plaintiff and having received an inventory of all artifacts and property which have been salvaged by the substitute custodian, Motivation, Inc., said inventory list having been designated as Exhibit "A" to the above Motion, and being otherwise fully advised in the premises. The Court finds that the list of the items on the inventory has been authenticated by the substitute custodian as true and complete and that the items and data relative to the finds have been duly logged and preserved in accordance with the Court's instructions and that the items have been placed in the possession of the Court for the adjudication of title and distribution upon the Court's Order. The Court also notes Plaintiff's filing of a Notice of No Objection to Plaintiff's Motion for

\_\_\_\_\_  
<sup>1</sup> The Court has adopted the language proffered but for minor alterations.

Order Adjudicating Title to Articles of Salvage (DE [706]), which states that "no objection on the merits has been filed within 10 days of the hearing" scheduled for June 25, 2025. (DE [706] at p. 1).<sup>2</sup>

Accordingly, it is hereby **ORDERED AND ADJUDGED** that:

1. The Motion (DE [701]) is **GRANTED**.
2. Plaintiff, Motivation, Inc., be and the same is hereby awarded title to all property, artifacts and treasure recovered from the wrecked Spanish Galleon NUESTRA SEÑORA DE ATOCHA, from the period January 1, 2024, through December 31, 2024, as contained on Exhibit A to Plaintiff's Motion (DE [701]) (Motivation's Atocha Recoveries Adjudication Report 2024), and delivered into the custody of the Court; and
3. Plaintiff, Motivation, Inc., be and the same is hereby directed to continue in its appointment as substitute custodian of artifacts and property yet to be discovered and recovered; and
4. The Court hereby retains jurisdiction to protect the valid in rem ownership by Plaintiff, Motivation, Inc., of the wrecked Spanish Galleon NUESTRA SEÑORA DE ATOCHA and all her tackle, armament, apparel and cargo wherever the same may be found and the salvage operations of the Plaintiff, Motivation, Inc., and to adjudicate its claim to a salvage award on a periodic basis for those artifacts hereafter recovered; and
5. Plaintiff, Motivation, Inc., be, and hereby is directed to continue to file with the Court its annual Report of On-Going Salvage Operations for the salvage of the NUESTRA SEÑORA DE ATOCHA.

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<sup>2</sup> Being that ten calendar days prior to the June 25, 2025 hearing would have been a Sunday, the Court has not filed this Order until Tuesday, June 17, 2025 still noting no objections to Plaintiff's Motion (DE [701]) have been filed.

6. The hearing for Adjudication of Title set for June 25, 2025 is hereby  
**CANCELED.**

**DONE AND ORDERED** in Chambers, Fort Lauderdale, Florida this 17th day of  
June 2025.

Copies furnished counsel via CM/ECF

  
\_\_\_\_\_  
RAAG SINGHAL  
UNITED STATES DISTRICT JUDGE

UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF FLORIDA

Case No. 79-cv-01381-BLOOM

MOTIVATION, INC.,

Plaintiff,

v.

THE UNIDENTIFIED, WRECKED,  
AND ABANDONED SAILING  
VESSEL, SANTA MARGARITA, ETC.,

Defendant.

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**ORDER ADJUDICATING TITLE TO ARTICLES OF SALVAGE**

THIS CAUSE is before the Court upon Plaintiff Motivation, Inc.'s annual Motion for Order Adjudicating Title to Articles of Salvage and Report of On-Going Salvage Operations and the Court ("Motion"), ECF No. [576]. On May 8, 2024, the Court retained jurisdiction to protect the valid ownership and salvage operations of Plaintiff and directed Plaintiff to continue to file its annual Report. *See* ECF No. [573]. On February 27, 2025, Plaintiff filed its annual Motion and requested that the Court schedule a hearing on the matter with enough time for Plaintiff to publish notice of the hearing in the Key West Citizen regarding the ongoing salvage operations. ECF No. [575], [576]. In the Motion, Plaintiff sets forth the recoveries from salvage operations of artifacts or property during the period January 1, 2024 to December 31, 2024. ECF No. [576-1].

The Court set a hearing for May 6, 2025, and Plaintiff published a public notice in the Key West Citizen. ECF Nos. [580], [581]. On April 28, 2025, Plaintiff filed a Notice of No Objection ("Notice"), indicating that no objection on the merits was filed. The Court has carefully reviewed the Motion, the record in this case, the applicable law, and is otherwise fully advised.

Case No. 79-cv-01381-BLOOM

Accordingly, it is **ORDERED AND ADJUDGED** as follows:

1. Plaintiff Motivation, Inc.'s Motion, ECF No. [576], is **GRANTED**.
2. Plaintiff Motivation, Inc., reports that there were no artifacts or treasure recovered from the wrecked Spanish Galleon SANTA MARGARITA, from the period January 1, 2024, through December 31, 2024, as set forth in Motivation's Adjudication Report, Santa Margarita 2024, ECF No. [576-1], which is **ACCEPTED**; and
3. Plaintiff, Motivation, Inc., is directed to continue in its appointment as substitute custodian of artifacts and property yet to be discovered and recovered; and
4. The Court retains jurisdiction to protect the valid *in rem* ownership by Plaintiff Motivation, Inc., of the wrecked Spanish Galleon SANTA MARGARITA and all her tackle, armament, apparel, and cargo, wherever it may be found, as well as the salvage operations of Plaintiff, and to adjudicate its claim to a salvage award on a periodic basis for those artifacts recovered; and
5. Plaintiff is directed to file with the Court its annual Report of On-Going Salvage Operations for the salvage of the SANTA MARGARITA.
6. The hearing set for May 6, 2025, is **CANCELED**.

**DONE AND ORDERED** in Chambers at Miami, Florida, on April 28, 2025.



**BETH BLOOM**  
**UNITED STATES DISTRICT JUDGE**

cc: counsel of record

**19 APPENDIX-12, 2025 FKNMS ATOCHA-MARGARITA  
CERTIFICATION**

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UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Florida Keys National Marine Sanctuary  
33 East Quay Road  
Key West, FL 33040

March 31, 2025

Mr. Kim Fisher, President/CEO  
Motivation, Inc.  
605 Simonton St. Suite – B  
Key West, FL 33040

Dear Mr. Fisher:

The National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries (ONMS) has approved the issuance of certification number FKNMS-2020-052-A6 to conduct activities within Florida Keys National Marine Sanctuary (sanctuary). Activities are to be conducted in accordance with the application and all supporting materials submitted to the sanctuary, and the terms and conditions of certification number FKNMS-2020-052-A6 (enclosed).

Your certification contains specific terms, conditions and reporting requirements. Review them closely as you must fully comply with them while undertaking authorized activities. Please be aware that Special Terms and Conditions #23 and #24 has been added to the certification to prevent adverse effects to protected species under the Endangered Species Act. Special Term and Condition #23 has been added in response to the recent listing of queen conch (*Aliger gigas*) as threatened under the Endangered Species Act (ESA) (89 FR 11208, Feb. 14, 2024). Special Term and Condition #3 has also been modified to protect queen conch. The ST&C 23 was developed based upon technical assistance from NOAA Fisheries and is consistent with portions of NOAA Fisheries Queen Conch Survey, Construction Conditions, Relocation and Reporting Guidelines (January 2025) published by the Protected Resources Division to minimize adverse effects. Please be aware that ONMS has initiated informal interagency consultation with the NOAA Fisheries Southeast Regional Office under ESA Section 7, and ONMS may need to modify this certification to revise these conditions depending on the outcome of ESA Section 7 consultation.

This certification is not valid until signed. Retain one signed copy and carry it with you while conducting the authorized activities. Additional copies must be signed and returned, by email, to the following individual within 30 days of issuance and before commencing any activity authorized by this certification:

Matthew Lawrence  
Archaeologist  
Florida Keys National Marine Sanctuary  
95230 Overseas Hwy  
Key Largo, Florida 33037  
[Matthew.Lawrence@noaa.gov](mailto:Matthew.Lawrence@noaa.gov)

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If you have any questions, please contact Matthew Lawrence at [Matthew.Lawrence@noaa.gov](mailto:Matthew.Lawrence@noaa.gov).  
Thank you for your continued cooperation with the ONMS.

Sincerely,



David Burke  
Superintendent (Acting)

Enclosures

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UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Florida Keys National Marine Sanctuary  
33 East Quay Road  
Key West, FL 33040

## FLORIDA KEYS NATIONAL MARINE SANCTUARY CERTIFICATION

**Certification Holder:**  
Mr. Kim Fisher, President/CEO  
Motivation, Inc.  
605 Simonton St. Suite – B  
Key West, FL 33040

**Certification Number:** FKNMS-2020-052-A6  
**Expiration Date:** March 31, 2026

**Certification Title:** *Nuestra Señora de Atocha and Santa Margarita Expeditions*

This certification is issued for activities in accordance with the National Marine Sanctuaries Act (NMSA, 16 U.S.C. §§ 1431 *et seq.*), and regulations thereunder (15 C.F.R. Part 922), and Section 106 and 110 of the National Historic Preservation Act. All activities must be conducted in accordance with those regulations and laws. No activity prohibited by regulations set forth in 15 C.F.R. Part 922 is allowed except as specified in the activity description below.

Subject to the terms and conditions of this certification, the National Oceanic and Atmospheric Administration (NOAA), Office of National Marine Sanctuaries (ONMS) hereby authorizes the certification holder listed above to conduct survey, inventory, research, and recovery of historical resources activities within Florida Keys National Marine Sanctuary (FKNMS or sanctuary). All activities are to be conducted in accordance with this certification.

Nothing in this certification shall be construed as terminating any valid right to access that was in existence on the date of sanctuary designation, and which may continue to be valid pursuant to Federal law and the ongoing retention of jurisdiction by the U.S. District Court for the Southern District of Florida in *In re: Nuestra Señora De Atocha*, Case No. 75-1416-Civ-Aronovitz (King) and *In re: Santa Margarita*, Case No. 79-1381-Civ-King in order to protect *in rem* ownership by the certification holder and periodically adjudicate title and a salvage award to recovered artifacts.

No deaccession/transfer permit is required for recovery of the *Atocha* and/or the *Margarita*, her/their tackle, armament, apparel, or cargo. Unless ordered or instructed otherwise by a Federal court of law, the certification holder shall continue to:

- File with the U.S. District Court for the Southern District of Florida or its successor annual Report of Salvage Operations for the *Atocha* and/or the *Margarita*;
- File periodic motion(s) seeking court order adjudication of title and a salvage award to all (or an inventory of all) articles and treasure recovered from the *Atocha* and/or *Margarita* and delivered into the custody of the court;
- Serve the appointment as substitute custodian of artifacts yet to be discovered and recovered; and

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Fisher  
Certification # FKNMS-2020-052-A6  
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- Comply with all existing and future orders issued by the U.S. District Court for the Southern District of Florida or its successor regarding *In re: Nuestra Senora De Atocha*, Case No. 75-1416-Civ-Aronovitz (King) and *In re: Santa Margarita*, Case No. 79-1381-Civ-King.

**Authorized Activity Description:**

The following activities are authorized by this certification:

1. Use of marine surveying equipment including magnetometers, side-scan sonars, sub-bottom profilers, metal detectors, electro-magnetic surveys using Hybrid Autonomous Underwater Vehicles (HAUV) and Remotely Operated Vehicles (ROVs), and placement of temporary datum markers, measuring tapes, and other surveying equipment on the sea floor at Authorized Activity Locations A1, M1, M2, and M3.

2. Excavation and research and recovery of historical resources utilizing airlift suction dredges, water suction dredges, water jets and prop-wash deflectors at Authorized Activity Locations A1, M1, M2, and M3.

3. Deployment of spuds and/or jack up rigs at Authorized Activity Locations A1, M1, M2, and M3 to support the activities listed above.

4. Placing targets on sand bottom and testing tethered HAUV and ROV equipment at Authorized Activity Location T1.

5. Survey activities for *Atocha* and *Margarita* artifacts may be conducted outside the FKNMS Authorized Activity Locations but within the valid Federal admiralty arrest area so long as such activities do not involve drilling, dredging, or otherwise altering the seabed of the sanctuary or engaging in any other activity prohibited under 15 C.F.R. § 922.163. Such survey activities shall also be conducted in accordance with paragraph 10 of the General Terms and Conditions.

No further activities prohibited by sanctuary regulations are allowed.

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**Authorized Activity Location:**

The authorized activities are allowed only in the following locations:

Atocha

A1. Within 600 yards of the axis created by connecting the following points:

Point No.	Latitude (°N)	Longitude (°W)
1	(b) (4)	(4)
2		
3		
4		
5		
6		
7		
8		
9		

Margarita

M1. Within an area bounded by the following coordinates:

Point	Latitude (°N)	Longitude (°W)
1	(b) (4)	(4)
2		
3		
4		

M2. Within an area bounded by the following coordinates:

Point	Latitude (°N)	Longitude (°W)
1	(b) (4)	(4)
2		
3		
4		

M3. Within 600 yards on either side of a line created by connecting the following coordinates:

Point	Latitude (°N)	Longitude (°W)
1	(b) (4)	(4)
2		

Tethered HAUV and ROV Testing Area

T1. Within 500 feet of the point located at (b) (4)

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Fisher  
Certification # FKNMS-2020-052-A6  
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**Special Terms and Conditions:**

1. Spuds and jack up rigs may only be deployed in locations devoid of natural resources including seagrasses, hardbottom, or corals.
2. The certification holder shall use only the minimum amount of engine RPMs, not to exceed 1200 RPMs, and time necessary (as indicated in the attached certification holder's "Prop-wash Deflector Table") to remove overburden and shall not destroy, cause the loss of, or injure any natural resources including seagrasses, hardbottom, or corals. The certification holder shall also not destroy or injure any underlying archaeological resources.
3. Airlifting and prop-wash deflectors shall not be used on or within 25 meters of any seagrass, hardbottom, or corals. Prop-wash deflectors or suction dredges shall not be used during times that current or sea conditions may cause excavation sediment plumes to carry over any seagrasses, hardbottom, corals, or queen conch.
4. The certification holder must complete the Archaeological Site Form and the Florida Master Site File Survey Log Sheet to document activities conducted under this certification, including the dates those activities are conducted, which staff/personnel are involved, and the geographic locations for such activities. The Site Form and Survey Log must be submitted to Matthew Lawrence at [Matthew.Lawrence@noaa.gov](mailto:Matthew.Lawrence@noaa.gov) or Matthew Lawrence, 95230 Overseas Hwy, Key Largo, FL 33037, as a digital copy or electronically by the certification's expiration date. The Site Form and Survey Log can be downloaded from the State of Florida's website at: <http://dos.myflorida.com/historical/preservation/master-site-file/documents-forms/>.
5. A qualified underwater archaeologist must conduct or oversee excavations or artifact recovery(s). This person shall meet the Secretary of the Interior's Professional Qualification Standards for Archaeology.
6. The certification number (2020052) must be prominently displayed in three places (port side, starboard side, and top) of the vessel(s) being used to conduct activities under this certification.
7. Except as provided in Special Condition 18.b, all survey methodology shall be consistent with the *Florida Division of Historical Resources Performance Standards for Submerged Remote Sensing Surveys* (the Standards; [http://dos.myflorida.com/media/31390/remote\\_surveys.pdf](http://dos.myflorida.com/media/31390/remote_surveys.pdf)).
8. A digital report detailing the progress of the project's archaeological research is due 60 days prior to the certification's expiration date. The report shall include the Florida Archaeological Site Form for all archaeological sites investigated and a Florida Master Site File Survey Log Sheet to document activities conducted under this certification. The Site Form and Survey Log can be downloaded from the State of Florida's website at: <http://dos.myflorida.com/historical/preservation/master-site-file/document-forms/>. Any reports produced as a result of activities conducted under this certification shall be consistent with the reporting requirements contained in the Standards (see Special Condition #7), Florida Chapter 1A-46, and the FKNMS "Research and Recovery Permit Report Guidelines." All reports shall be submitted to the individual listed in General Condition #1 and to the State Historic

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Fisher  
Certification # FKNMS-2020-052-A6  
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Preservation Officer, Division of Historical Resources, R.A. Gray Building, 500 South Bronough Street, Tallahassee, FL 32399. Within 30 days of the submission of this report to the FKNMS, the certification holder will redact sensitive site coordinate information from the report and publish the redacted report in its Research Archives website, available at <https://melfisher.com/artifacts/>, and send a notification email to the individual listed in General Condition #1 and the State Historic Preservation Officer at the State of Florida's Division of Historical Resources that the redacted report is available for review or download.

9. Alteration of the seabed and discharge of sediments shall be conducted in a manner that does not destroy, harm, or injure seagrasses, hardbottom or corals, or any other sanctuary resource. FKNMS staff and staff from any other agency with jurisdiction over the certification holder's activities may observe excavation and recovery activities authorized under this certification to determine whether additional conditions are required to address water quality impacts. If NOAA determines that the certification holder's activities are resulting in destruction, harm, injury to, or loss of sanctuary resources including water quality, NOAA will require the certification holder to cease operations until such time that the certification holder alleviates the problem to the satisfaction of FKNMS. At a minimum environmental restoration shall be performed by the certification holder for any destruction, harm, injury to, or loss of sanctuary resources caused by the conduct of the activities carried out by the certification holder.

10. This certification does not authorize the recovery of any non-*Atocha* or non-*Margarita* archaeological deposits or artifacts within or outside of Authorized Activity Locations A1, M1, M2, and M3 above. Any non-*Atocha* or non-*Margarita* artifacts discovered by the certification holder will be handled according to the Policy for Post-Review Discoveries attached to the certification.

11. Conducting research or field work of any kind under this certification one hour after official sunset to one hour before official sunrise is prohibited.

12. It is the certification holder's responsibility to send notification via e-mail to [FKNMSPermits@noaa.gov](mailto:FKNMSPermits@noaa.gov) when engaging in any activities under this certification. The certification holder may delegate this responsibility to send trip notification e-mails to a member of Motivation, Inc. staff. Each trip requires a separate notification; if the activity location changes during the course of the trip, an updated notification is required. Please provide the following information in the email notification:

- 1) Certification number
- 2) Name of certification holder
- 3) Name of field work point of contact (POC)
- 4) Phone number of field work POC
- 5) Location of activities (reef name or area & specific geographic coordinates within 1 kilometer of operations)
- 6) Approximate time of activities (approx. time at the site)
- 7) Closest mile marker on US1 to activities
- 8) Vessel(s) name, registration # and description (type, length, hull color)

13. Individuals authorized to conduct activities under this certification are: Kim Fisher (President/CEO), James Sinclair (Supervising Archaeologist), Gary Randolph  
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Fisher  
Certification # FKNMS-2020-052-A6  
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(Archaeological Assistant), John Corcoran (Artifact Conservator), Timothy Meade, Vincent Trotta, Dan Porter and Doug Pope. Requests for amendments (i.e., requests to update or add to the list of authorized individuals) must conform to General Terms and Conditions #2.

14. Deploying HAUV/ROV targets and testing tethered HAUV/ROV equipment under Authorized Activity Description #4 may be conducted periodically for the duration of this certification and within Authorized Activity Location T1 only. All targets and surveying equipment must be removed at the end of each test.

15. The certification holder must notify the individual listed in Special Condition #4 when seeking any relief, order or ruling pursuant to the *Atocha* admiralty claim (75-cv-1416) or *Margarita* admiralty claim (79-cv-1381). The certification holder must provide a brief statement describing the nature of the action at least thirty (30) business days before the action is scheduled for hearing or consideration by the court.

16. NOAA reserves the right to have an observer(s) aboard the certification holder's vessel during all activities authorized by this certification. The NOAA Observer(s) may document the certification holder's activities for the purpose of determining whether the activities are conducted in accordance with the terms and conditions of this certification and the applicable statutes and regulations. The NOAA Observer(s) may also provide limited advice and technical assistance, if requested by the certification holder. The NOAA Observer(s) will not be present for the purpose of safety of the certification holder, nor for the purpose of approval of activities not specifically authorized by this certification. NOAA further reserves the right to conduct, or have conducted, independent study or verification of any cultural resources within the Authorized Activity Location.

17. Issuance of this certification does not convey any rights to any future certifications or permits, including private-sector disturbance to or recovery of any shipwrecks or associated artifacts within the Authorized Activity Location. Any future applications for disturbance to any maritime heritage resources within the Authorized Activity Location will be subject to review and take into consideration the National Marine Sanctuaries Act, National Historic Preservation Act, Florida Keys National Marine Sanctuary and Protection Act, and any other laws, regulations, and agreements in effect at that time.

18. The certification holder shall provide the following information to the individual listed in General Condition #1 on a quarterly basis (on or before June 30, 2025, September 30, 2025, December 31, 2025, and March 31, 2026):

a. Scanned digital secured PDF copies of Motivation, Inc.'s hand-written excavation logs and an EXCEL spreadsheet capturing the same information from the hand-written excavation log sheets in a table format, with geographic locations of excavations provided in a decimal degree format. Each subsequent spreadsheet submitted shall have the excavation log information amended to it such that the final submission contains information on all the excavations conducted by the certification holder for the year. FKNMS can provide an example spreadsheet template upon request.

b. Geo-referenced high-resolution side scan sonar data of all excavation areas and surrounding buffer of 25 meters. The side scan sonar survey must occur prior to

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Fisher  
Certification # FKNMS-2020-052-A6  
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conducting excavation and the data must be gathered no more than two years prior to the planned initiation of excavation. The sonar data shall be provided in the raw format generated by the side scan sonar system used. Sonar data shall be gathered with a side scan sonar operating at 300 kHz or higher frequencies. Side scan sonar methodology shall utilize lane spacing that results in 100% coverage of the seafloor and a side scan sonar range that does not exceed 50 meters.

c. Magnetic and, if available, electro-magnetic target maps and target tables showing the location, duration, and intensity of remote sensing targets that were the focus of excavations that quarter, and raw survey data in CSV format with the following fields: Latitude Decimal Degrees WGS84, Longitude Decimal Degrees WGS84, UTM 17N Easting, UTM 17N Northing, Survey Line Number, Magnetic Field Reading/Electromagnetic Reading.

d. Diver-collected HD video (Gopro or similar) of bottom habitats prior to excavation at any location within 25 meters of seagrasses (continuous or discontinuous) depicted on the Florida Fish and Wildlife Conservation Commission-Fish and Wildlife Research Institute (FWC-FWRI) Unified Reef Map and/or the certification holder's benthic survey information. The video shall document that no seagrass is present and may be damaged by the excavation. Divers shall swim a single circle-search pattern with radius of 10 meters from the excavation's planned center. Divers shall continuously record their dive with a HD video camera pointed obliquely at the seafloor, approximately 1 meter above the seafloor. The camera's date and time settings shall be properly calibrated prior to filming to ensure that the date and time of each dive is accurately recorded. Prior to entering the water, divers shall also capture a short segment of video of a slate on which is written the date, vessel, and excavation number to help organize the files.

19. The certification holder shall update their project GIS to use a coordinate system based on either a geographic coordinate system utilizing the NAD 1983 or WGS 1984 datum or the UTM projected coordinate system utilizing the NAD 1983 or WGS 1984 datum. The update is to ensure the proper display of publicly available datasets, such as the FWC-FWRI Unified Reef Map, and side scan sonar geo-TIFF files for sanctuary resource protection. The update will ensure interoperability of GIS data shared between ONMS and the certification holder.

20. Prior to seeking title to any artifacts recovered from *Atocha* or *Margarita* through adjudication by the U.S. District Court for the Southern District of Florida, the certification holder shall provide to the individual listed in General Condition #1 information about each artifact for which it will seek title. Information for each artifact will include the Motivation artifact number, a scaled photograph or photographs to fully characterize the object, its recovery location, and the artifact numbers of other artifacts found within the same excavation. The certification holder may satisfy this condition by submitting PDF artifact reports generated from the certification holder's database that contain this required information and by making the artifact photographs available through the certification holder's online version of the database. The certification holder shall supply the information at least 30 calendar days prior to seeking adjudication and will allow the ONMS that time to make its own determination as to the artifact's origin. The artifacts shall also be made available for in-person ONMS inspection. Artifacts determined by the ONMS to originate from a shipwreck or other archaeological site that is not the *Atocha* or *Margarita*, shall be

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Fisher  
Certification # FKNMS-2020-052-A6  
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conserved and curated by the certification holder for the ONMS under a curatorial services agreement at no cost to the ONMS. The curatorial services agreement must be with the certification holder, a museum or facility for curation, as well as ONMS, and must provide for the maintenance of the recovered artifact, as well as public access and periodic display of the artifact. Should the certification holder disagree with ONMS' determination as to whether the recovered artifact is from *Atocha* or *Margarita*, external experts mutually agreed upon by the ONMS and the certification holder will be consulted.

21. The certification holder shall not conduct sediment disturbance activities or artifact collection within 50 meters of the historic shipwreck, with characteristics of a nineteenth century vessel, located at geographic position (b) (4) (Decimal Degrees Format (b) (4) (b) (4) ) (WGS84).

22. Prior to submitting any data, reports, or other information to the individual listed in General Term and Condition #1 in accordance with this certification, the certification holder shall use good faith efforts to clearly identify and mark as confidential any confidential commercial information (as defined in 15 CFR § 4.9), including any coordinates identifying actual and/or estimated locations of the *Atocha* or *Margarita* shipwreck, contents, and cargo, that the certification holder considers to be protected from disclosure under applicable law. If NOAA receives a request for information that the certification holder has marked as confidential commercial information, information or documents that include any coordinates identifying actual and/or estimated locations of the *Atocha* or *Margarita* shipwreck, contents, and cargo, or information that NOAA has reason to believe may be protected from disclosure under Freedom of Information Act exemption (b)(4) (5 U.S.C. § 552(b)(4)), NOAA shall give the certification holder notice of such request in accordance with 15 CFR § 4.9 and shall follow the procedures required therein for responding to the request. Pursuant to 15 CFR § 4.9(b), the certification holder's designation of confidential commercial information shall not expire while the certification holder retains the pre-existing admiralty rights to the *Atocha* or *Margarita*.

Any paper copies of data, reports, or other information the certification holder provides to the individual listed in General Term and Condition #1 and has been marked confidential and/or contains coordinates identifying actual and/or estimated locations of the *Atocha* or *Margarita* shipwreck, contents, and cargo shall be secured in the locked offices of FKNMS maritime heritage staff or in locked filing cabinets only accessible to those same staff. Digital data, reports, or other information the certification holder provides to the individual listed in General Term and Condition #1 and has been marked confidential and/or contains coordinates identifying actual and/or estimated locations of the *Atocha* or *Margarita* shipwreck, contents, and cargo shall be housed in restricted access files on a secured file server that is only accessible by FKNMS managers, FKNMS maritime heritage staff, and ONMS IT managers. When submitting any data, reports, or other information the certification holder has marked confidential to the individual listed in General Term and Condition #1, the certification holder shall use the Department of Commerce's secure file transfer.

23. Prior to the deployment of all objects, tools, materials, equipment and/or initiating an excavation, the certification holder shall conduct a benthic survey consistent with the methodology described in the NOAA Fisheries Southeast Regional Office Queen Conch Survey, Construction Conditions, Relocation, and Reporting Guidelines (link below) such that the



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benthic survey covers an area within a 72.18-foot (22 meter) radius from the central point of the deployment or excavation location to ensure that no queen conch (*Aliger gigas*) are present. Should any live animals be found, the certification holder shall notify ONMS by completing the Queen Conch Species Reporting Google Form listed below. To continue work, deployments or excavations must be at least 72.18 feet (22 meter) away from the animal's location at the time of the benthic observation such that no disturbed sediment could adversely affect queen conch. Deployments or excavation activities immediately adjacent to one another only need to be surveyed once every 90 days as long as the survey encompasses the initial and subsequent deployment and excavation areas and the 72.18 feet (22 meter) buffer.

Queen Conch Species Reporting: <https://forms.gle/cNYU7g8Uiv7iZUUq6>  
<https://www.fisheries.noaa.gov/s3/2024-09/Queen-Conch-Survey-Construction-Conditions-and-Relocation-Guidelines.pdf>

24. The attached best management practices shall be followed at all times while conducting activities under this certification:

Attachment Number	Document Name
Attachment 1	<i>NOAA Fisheries Protected Species Construction Conditions</i> (2021)
Attachment 2	<i>Standard Manatee Conditions for In-Water Work</i> (2011)
Attachment 3	<i>NOAA Fisheries Vessel Strike Avoidance</i> (2021)

**General Terms and Conditions:**

1. Within 30 (thirty) days of the date of issuance, the certification holder must sign and date this certification for it to be considered valid. Once signed, the certification holder must send copies, via email, to the following individual:

Matthew Lawrence  
Archaeologist  
Florida Keys National Marine Sanctuary  
95230 Overseas Hwy

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Key Largo, Florida 33037  
[Matthew.Lawrence@noaa.gov](mailto:Matthew.Lawrence@noaa.gov)

2. This certification may only be amended by ONMS. The certification holder may not change or amend any part of this certification at any time. The terms of the certification must be accepted in full, without revision; otherwise, the certification holder must return the certification to the sanctuary office unsigned with a written explanation for its rejection. Amendments to this certification must be requested in the same manner the original request was made.

3. All persons participating in the authorized activity must be under the supervision of the certification holder, and the certification holder is responsible for any violation of this certification, the NMSA, and sanctuary regulations for activities conducted under, or in conjunction with, this certification. The certification holder must assure that all persons performing activities under this certification are fully aware of the conditions herein.

4. This certification is non-transferable and must be carried by the certification holder at all times while engaging in any activity authorized by this certification.

5. This certification may be suspended, revoked, or modified for violation of the terms and conditions of this certification, the regulations at 15 CFR Part 922, the NMSA, the FKNMSPA or for other good cause. Any such action will be communicated in writing to the applicant or certification holder by certified mail, and shall set forth the reason(s) for the action taken.

6. This certification may be suspended, revoked or modified if requirements from previous ONMS certifications, permits or authorizations issued to the certification holder are not fulfilled by their due date. Any such action shall be communicated in writing to the applicant or certification holder by certified mail and shall set forth the reason(s) for the action taken.

7. Certification or permit applications for any future activities in FKNMS or any other sanctuary in the system by the certification holder might not be considered until all requirements from this certification are fulfilled.

8. This certification does not authorize the conduct of any activity prohibited by 15 CFR Part 922, other than those specifically described in the "Authorized Activity Description" section of this certification. If the certification or any person acting under the certification's supervision conducts, or causes to be conducted, any activity in the sanctuary not in accordance with the terms and conditions set forth in this certification, or who otherwise violates such terms and conditions, the certification holder may be subject to civil penalties, forfeiture, costs, and all other remedies under the NMSA and its implementing regulations at 15 CFR Part 922.

9. Any publications and/or reports resulting from activities conducted under the authority of this certification must include the notation that the activity was conducted under the National Marine Sanctuary Certification #FKNMS-2020-052-A6 and be sent to the ONMS official listed in General Terms and Conditions #1.

10. This certification does not relieve the certification holder of responsibility to comply with all other federal, state and local laws and regulations, and this certification is not valid until  
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all other required permits, authorizations, and approvals are obtained. Particularly, this certification does not allow disturbance of marine mammals or seabirds protected under provisions of the Endangered Species Act, Marine Mammal Protection Act, or Migratory Bird Treaty Act. Authorization for incidental or direct harassment of species protected by these acts must be secured from the U.S. Fish and Wildlife Service and/or NOAA Fisheries, depending upon the species affected.

11. The certification holder shall indemnify and hold harmless the Office of National Marine Sanctuaries, NOAA, the Department of Commerce and the United States for and against any claims arising from the conduct of any authorized activities.

12. Any question of interpretation of any term or condition of this certification will be resolved by NOAA.

Your signature below, as the certification holder, indicates that you accept and agree to comply with all terms and conditions of this certification. This certification becomes valid when you, the certification holder, countersign and date below. This certification cannot be backdated and does not apply retroactively. Please note that the expiration date on this certification is already set and will not be extended by a delay in your signing.

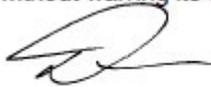
(b) (4)

4/30/2025

Mr. Kim Fisher  
President/CEO  
Motivation, Inc.

Date

\*\*This certification is signed by Motivation, Inc. subject to the joint stipulation reached between the FKNMS and Motivation, Inc. dated April 26, 2021, which is attached hereto and without waiving its objections, amendment requests and any appeals of new terms.\*\*



March 31, 2025

Mr. David Burke  
Superintendent (Acting)  
Florida Keys National Marine Sanctuary

Date

- Enclosures:
- Policy for Post-Review Discoveries
  - Prop-wash Deflector Table
  - NOAA Fisheries Protected Species Construction Conditions
  - Standard Manatee Conditions for In-Water Work
  - NOAA Fisheries Vessel Strike Avoidance
  - NOAA Fisheries Queen Conch Survey, Construction Conditions, Relocation, and Reporting Guidelines

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#### Policy for Post-Review Discoveries

In addition to the historic properties at which Motivation, Inc. intends to direct its activities, one other known historic property is known to exist in the APE. Effects to this historic property are avoided through a certification condition that prohibits sediment disturbance and artifact recovery within a 50 meter buffer area surrounding the property. In the event that other, as yet unidentified, historic properties are found by Motivation, Inc. in the APE, the following certification conditions will minimize or mitigate effects to these properties. Effects to unidentified historic properties would likely arise from Motivation, Inc.'s excavation activities that unintentionally disturb a non-*Atocha/Margarita* archaeological site.

Motivation, Inc.'s policy for the unintended excavation of non-*Atocha/Margarita* artifacts, described below, is incorporated into the certification conditions as part of the application materials submitted to ONMS. The policy is as follows:

- 1) If the Captain of the salvage vessel and the assistant archaeological data recorder are absolutely sure that an artifact that has been located on the bottom or recovered to the deck of the salvage vessel is NOT an *Atocha* or *Margarita* artifact, they will:
  - a. Record the non-*Atocha/Margarita* artifact on the ship's Daily Log Sheet as such with a short description of the artifact.
  - b. Take a photo if possible, with a dive slate showing the date and name of the recovery vessel (to later be given to the Motivation conservation staff).
  - c. If recovered to the deck of the salvage vessel, it will be returned to the seabed where it was found and buried.
- 2) If the Captain of the salvage vessel and assistant archaeological data recorder are NOT absolutely sure that an artifact that has been located on the bottom or recovered to the deck of the salvage vessel is an *Atocha* or *Margarita* artifact they will:
  - a. Recover the artifact and tag it.
  - b. Log it as usual on the ship's Daily Log Sheet.
  - c. Bring it with the rest of the artifacts to Motivation's conservation lab for analysis by the senior conservator and review by the senior archaeologist.
  - d. Enter it into the artifact database with pre-conservation photograph taken.
  - e. If the senior conservator or senior archaeologist determine that it is a non-*Atocha/Margarita* artifact it will be recorded in the Motivation artifact database in the "Wreck Site" field as either "Intrusion-*Atocha*" or "Intrusion-*Margarita*" and will be returned to the location it was found. As it had a tag number assigned to it, it will be included in the conservation lab reports under these wreck site descriptions.

In situations where Motivation, Inc. personnel do not identify an artifact as being from a non-*Atocha/Margarita* site, but the FKNMS archaeologist identifies it as such during pre-adjudication review, this agreement's stipulation #13 (certification Special Terms and Conditions #20) will apply.

#### Post-Review Discoveries of Human Remains

In the event that human remains are discovered during Motivation, Inc.'s activities, the certification holder shall follow the protocols set forth under Title XLVI Florida Statute 872.05. In addition to the state protocol, the certification holder shall:

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- 1) Notify ONMS staff through an email to [FKNMSpermits@noaa.gov](mailto:FKNMSpermits@noaa.gov) within 24 hours of discovery.

If human remains or other cultural material that may fall under the provisions of the Native American Graves Protection and Repatriation Act are found, ONMS shall notify tribal representatives of any interested Tribes and begin consultation with those Tribes and the Florida SHPO to resolve adverse effects.

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**Prop-wash Deflector Table**

MAILBOX

**Twin Prop-Wash Deflector Tables**

**TABLE 1**

**PROP-GROUPS**

WATER DEPTH	PROP SIZE (inches)			
	12"-24"	25"-36"	37"-48"	48"-up
0'-10'	P-1	P-5		
11'-25'	P-2	P-6	P-11	
26'-35'	P-3	P-7	P-12	P-17
36'-46'	P-4	P-8	P-13	P-18
48'-55'		P-9	P-14	P-19
56'-65'		P-10	P-15	P-20
66"-plus			P-16	P-21

Designed by Captain Gary Randolph at Motivation, Inc.

Choose your prop size along the top.  
 Choose your working depth along side.  
 This gives you your prop-group rating.

Apply your prop-group to Table 2 for Maximum Time/RPM range for the bottom conditions on your site.

**TABLE 2**

**TIME/RPM GROUP**

**MAXIMUMS**  
 TIME in minutes

Example: 35/1000  
 Dig 35 minutes at an RPM of 1000

**PROP GROUP**  
 (table 1)

	Sea Bottom Conditions								
	Hard Bottom Comm. w/ 0-0.5' overburden	Sand or Unconsolidated Mud				Consolidated Mud *			
		0.5'-2'	2'-4'	4'-8'	8'-more	0'-0.5'	0.5'-1'	1'-2'	2'-more
P-1		4/1200	10/1200	30/1500	50/1500	42/1500	42/1500	42/1500	42/1500
P-2		10/1200	20/1500	50/1500	70/1500	55/1500	55/1500	55/1500	55/1500
P-3		20/1200	40/1500	70/1500		65/1500	65/1500	65/1500	65/1500
P-4		20/1500	50/1500			75/1500	75/1500	75/1500	75/1500
P-5		2/1200	5/1200	15/1500	25/1500	22/1500	22/1500	22/1500	22/1500
P-6		5/1200	10/1500	25/1500	35/1500	35/1500	35/1500	35/1500	35/1500
P-7		10/1200	20/1500	35/1500	45/1500	45/1500	45/1500	45/1500	45/1500
P-8		10/1500	30/1500	45/1500	60/1500	55/1500	55/1500	55/1500	55/1500
P-9		20/1500	40/1500	55/1500		65/1500	65/1500	65/1500	65/1500
P-10		30/1500	50/1500			75/1500	75/1500	75/1500	75/1500
P-11		2/1200	5/1200	15/1500	25/1500	12/1500	12/1500	12/1500	12/1500
P-12		5/1200	10/1500	25/1500	35/1500	25/1500	25/1500	25/1500	25/1500
P-13		10/1200	20/1500	35/1500	45/1500	35/1500	35/1500	35/1500	35/1500
P-14		10/1500	30/1500	45/1500	60/1500	45/1500	45/1500	45/1500	45/1500
P-15		20/1500	40/1500	55/1500		55/1500	55/1500	55/1500	55/1500
P-16		30/1500	50/1500			65/1500	65/1500	65/1500	65/1500
P-17									
P-18									
P-19									
P-20									
P-21									

NOTES:  
 \*Digging in consolidated mud must be done at a maximum per dig depth of 0.5' before being checked for artifacts in each layer.

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April 26, 2021

Ms. Nicole R. LeBoeuf  
Acting Assistant Administrator  
National Ocean Service  
National Oceanic and Atmospheric Administration  
1305 East-West Highway, SSMC4, 13th Floor  
Silver Spring, MD 20910

**RE: April 21, 2021 Letter from Motivation, Inc. re: FKNMS Certification issued March 31, 2021 FKNMS-2020-052 (*Atocha & Margarita*); *Motivation, Inc. et al. v. Sec. of Commerce, et al.*, Civil Action No. 4:20-cv-10140**

Dear Ms. LeBoeuf,

The Superintendent of Florida Keys National Marine Sanctuary and Appellants Motivation, Inc. and its President/CEO, Mr. Kim Fisher, have discussed, through their counsel, Mr. Charles' April 21, 2021, letter to you and have agreed to the following:

Notwithstanding any certification terms and conditions or other rules or regulations to the contrary, the signature of Mr. Kim Fisher, President/CEO, Motivation, Inc. (hereinafter "Motivation"), on Certification #FKNMS-2020-052 issued on March 31, 2021, shall not act as a waiver of any issues asserted by Motivation in its appeal of the National Ocean Service Assistant Administrator's Final Decision dated October 26, 2020 before the U.S. District Court for the Southern District of Florida in *Motivation, Inc., et al. v. Sec. of Commerce, et al.*, Civil Action No. 4:20-cv-10140, under the Administrative Procedures Act ("APA"), 5 U.S.C. §§ 701, *et seq.* or otherwise, and shall not constitute an admission or a statement against Motivation's interests with regard to said appeal or a waiver of its rights to appeal the Certification terms and conditions pursuant to 15 C.F.R. § 922.50.

Motivation, Inc. continues to object to certain terms and conditions in the Certification. However, by signing the Certification, Motivation, Inc., indicates that it agrees to comply with all terms and conditions of the Certification unless and until such terms and conditions are modified by order of court or otherwise.

Based on the foregoing agreement between Appellants and the FKNMS Superintendent, Motivation respectfully withdraws its April 21, 2021 request to you for immediate relief in relation to the signature requirement in the Certification #FKNMS-2020-052.

Sincerely,



Jackie Rolleri  
Office of the General Counsel, Oceans and Coasts Section  
National Oceanic and Atmospheric Administration

*/s/ Matthew T. Charles*

Matthew T. Charles  
CONCANNON & CHARLES

cc: Kim Fisher, President/CEO, Motivation, Inc.  
Sarah Fangman, Superintendent, FKNMS

## 20 SOME FINAL THOUGHTS...

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*“The finding of a great treasure from the days of the Spanish Main is not the cherished dream of only the United States and Florida citizens; countless people from other lands have shared such thoughts. It would amaze and surprise most citizens of this country, when their dream, at the greatest of cost, was realized, that agents of respective governments would, on the most flimsy grounds, lay claim to the treasure”*

- Judge William O. Mehrtens

U.S District Court for the Southern District of Florida

August 21, 1978, ruling against the State of Florida

May 14, 2019

Key West, Florida

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF FLORIDA

KEY WEST DIVISION

MOTION TO ADJUDICATE ARTICLES HEARING

CASE NO. 75-CV-1416-KING

CASE NO. 79-CV-1381-KING

**THE HONORABLE JAMES LAWRENCE KING**

UNITED STATES DISTRICT JUDGE

“Generally, I believe, I held the salvage concept and what we were doing to encourage salvors, to encourage salvors. See, for years -- well, almost entirely, to my knowledge, the state has never expended any funds to do any salvage, never undertaken any salvage, they have simply, before these cases started, come in and asserted ownership, or in whatever private salvors that were expending their own funds, their own resources to make discoveries, they come in and make claims.

And so that was the status of it and, of course, that doesn't encouraged salvors to do anything, except whatever they found, if they chose, if they wish to be -- to not act in the interest of the public, to sell items on the black market or sell it privately -- not the black market, but it was destructive of the whole concept of historic wrecks, encouraging salvage, encouraging there to be further disclosure in the federal court, consideration of the items, and then a division or a adjudication of title to those particular items.

So that's what we were doing with and, of course, that's in all these orders that we've written. But, I think, generally, I have been holding generally to a degree of funding, I mean, this is all in the interest of the public.”

**JAMES LAWRENCE KING**