C H A P T E R 4

**Timber *Asientos* for the Spanish Royal Navy in New Spain during the second half of the 18th century**

The final chapter deals with logging contracts in the Gulf of Mexico and the Caribbean Sea region for the supply of the Spanish naval departments in the second half of the 18th century. These operations, carried out in several locations in the Greater Caribbean, were the direct consequence of the policy pursued by the Crown to systematically upgrade its *Marina real* during this period. The forest surveys mentioned in Chapter III were instrumental for these contracts, which included the felling, processing, and supply of timber for shipbuilding.

The *asientos* granted by the colonial viceroys and governors secured the supply of cedar and mahogany for the shipyards. However, the analysis of the contracts shows that the main beneficiaries of these *asientos* were the local elites, which reaped handsome profits and expanded their political and economic influence in their provinces.

**Early timber *asientos* in the Viceroyalty of New Spain in the second half of the 18th century**

The survey projects sponsored by viceroys Croix and Bucareli had little impact on the Secretary of the Navy, as the only large-scale felling operations for masting were those in the region in Chimalapas, where pine was sourced for the naval departments in Havana and the metropolis. These operations were supervised by royal officials and directly funded by the *cajas reales* in New Spain. The viceroyalty’s limited contribution to supply was due to the small number of *asientos* for the felling and dressing of timber awarded to that date, and to the small demand for naval timber in New Spain. Despite this, some contracts were negotiated in the second half of the 18th century; these aimed to supply fleets, squadrons, shipyards and the Navy departments with dressed spare parts, bottoms, and full vessels.

The first known such *asiento* in New Spain was awarded to Captain Andrés Berdeja, for the supply of dressed parts to the Armada de Barlovento in 1742. The contract was still valid by 1748, when, as previously noted, Diego Fentanez, the owner of the haciendas of Solcuautla and Cuatotolapán, filed a lawsuit against the *asentista* for felling some cedars without permission.[[1]](#footnote-1)

However, it was not until the 1760s that the first large-scale operations to supply the *Marina Real* were undertaken. The first *asiento* of the decade was awarded to Brigadier General Antonio Basilio Berdeja, representing his father Captain Don Andrés Berdeja, in 1766. This contract heeded an order issued in 1764 by Viceroy Marquis of Cruillas in response to the the king’s fleets in Veracruz’s scarcity of wood. It was at the time not rare to sell beams and pieces of masting to private customers “to build houses”.[[2]](#footnote-2) In December 1765, the viceroy decided to award a long-term contract to experienced *asentistas*, such as Andrés Berdeja and his son Antonio. Initially, the contract had a duration of five years, beginning in February 1766, and contemplated the supply of dressed mahogany and cedar parts to the royal warehouses of Veracruz to make, stocks, tillers, boards of different sizes, and bends. The trees were felled in the hills of Tlacotalpan.[[3]](#footnote-3) The first load was delivered in June 1766, and consisted of the following:

* A rudder, 14 *varas* long, 36 inches wide, 18 inches thick, and 25 inches in square;
* A tiller of *zapote*, 10 *varas* and a half long and 13 inches in square;
* A stock seven *varas* and a half long and 20 inches at the cross;
* A stock seven *varas* long and 21 inches at the cross;
* A stock seven *varas* and three quarters long and 20 inches at the cross;
* A stock five *varas* and a half long and 22 inches at the cross;
* A curve, larger than usual;
* 16 knees, regular size;
* Three mid-sized curves;
* 25 large boards;
* 400 regular boards;
* 52 regular side boards;
* 369 small boards;
* 98 costons;
* 13 beams.[[4]](#footnote-4)

This delivery had a cost of 1,882 *pesos* and 3 *reales*. More deliveries of dressed pieces and boards followed, and all the parts delivered in 1770 fetched a cost of 9,173 *pesos*, paid by the *caja real* of Veracruz. This brought the first major *asiento* awarded by the Crown to members of the Veracruz elite, in the second half of the 18th century. It is important to note that the area exploited by the Brigadier General was visited by Miguel del Corral during his survey of Veracruz and Oaxaca in 1777. In his relation, del Corral pointed out that he had found traces of the *asentista*’s woodmen’s work.[[5]](#footnote-5)

The document does not specify the sort of wood used, but other documents suggest that the stocks and the beams were made of hard mahogany and the boards of cedar. The use of *zapote* for a tiller is of great interest, because this wood was rarely used in shipbuilding, although it was frequently employed in construction; Joseph Jiménez was hired to supply fruit tree and cedar wood for the reconstruction of the Castle of San Juan de Ulúa, in Veracruz, in 1775. When he began felling trees in Tuxpan, Tecolutla, and Papantla, Jiménez found out that the shipbuilder Juan Felipe Michelena was felling zapotes without authorisation. This illegal operation was stopped by the *alcalde mayor*, Juan Joseph Enciso, to whom the locals had complained. The official explained that he had intervened because, apart from the fact that the felling was unauthorised, “the Indians make use of the *zapote*, not only eating its admirable fruit, but for that resin that they call chicle, the crop of which sustains them and helps them to pay their taxes”.[[6]](#footnote-6) This conflict between Joseph Jiménez and Juan Joseph Enciso, like that which pitched Diego Fentanez against Andrés Berdeja in 1748, illustrates the problems that ensued when *asentistas* abused their rights and sourced wood outside the designated *realengo* forests, clashing with local *hacendados* and indigenous communities.

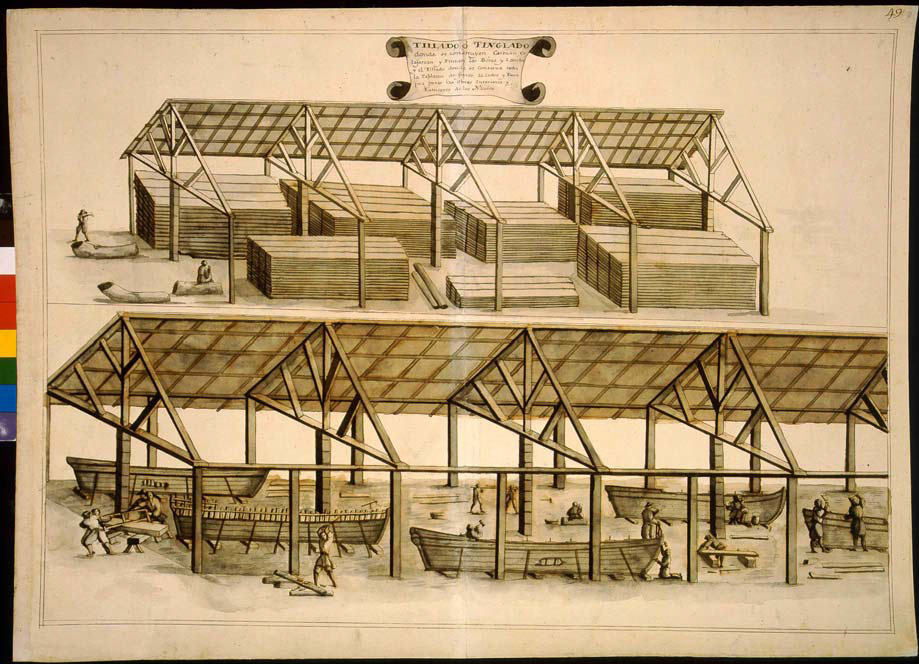
**An attempted *asiento* for masting in favour of Domingo Ramón Balcarsel in 1768**

It has been noted that, in addition to the operations supervised by royal officers in Chimalapas, a private *asiento* to fell pines in Veracruz was also awarded in the 1760s. From mid-1767 onwards, the royal officials of Veracruz and the navy were trying to find a way to provide the local warehouse and the navy departments with masting, which was in short supply. Early in 1768, Don Domingo Ramón Balcarsel offered his services to make up for these shortcomings.[[7]](#footnote-7) The contractor committed to extract from Perote the full masting for three 80-gun ships for 12,000 *pesos de a ocho*, three 70-gun ships for 11,000 *pesos de a ocho*, four 60-gun ships for 10,000 *pesos de a ocho*, and six 30-gun frigates for 5,500 *pesos de a ocho*. In order to make his proposal more attractive for the *Real Hacienda*, the *asentista* offered an 8% discount over the total price. The *asiento* was approved by Viceroy Marquis of Croix and, on 25 July 1768, by the king. The royal order was sent to New Spain with a list made in the shipyard of La Carraca by Don Ciprian Autran, who had also assessed the proposal, with the number and dimensions of the required masts.[[8]](#footnote-8)

It is known that Don Domingo Ramón Balcarsel began felling on of the banks of the La Lana River. However, the scarcity of good trees for masting –there were only ordinary pines, known by the natives as *ocotes*– made him relocate to a hill that was a league distant from Zapotitlán, where he fell approximately 250 pieces. He then faced problems moving the timber to and down the river –something about which Lorenzo Arrinda had warned in his report– forcing the *asentista* to ask for more money to finish the job. This was denied, and the contractor forfeited his contract, returning the masting and the tools that he had been given when the contract was signed. Afterwards, he filed a lawsuit to get the money spent in wages refunded. Interestingly, engineer Miguel del Corral had visited these areas in 1777, reporting that the pines there were too heavy and knotty, which made them unsuitable for masting.[[9]](#footnote-9)

Finally, it is worth pointing out that the 1770s did not witness further significant initiatives to promote the extraction of wood for naval purposes in New Spain. It is true that Viceroy Bucareli sponsored the survey of woodland in Veracruz, Oaxaca, Tabasco, and Campeche, but these efforts did not crystallise in significant felling operations. The *asiento* signed by the Bordejas in 1766 was still active by 1773,[[10]](#footnote-10) and the transport of the final 350 masts extracted from Chimalapas, which were at the time sitting in a *tinglado* (organized store of timber (see Figure 16) in the mouth of the Coatzacoalcos, was being organised,[[11]](#footnote-11) but no additional contracts for naval supplies were signed during this decade. This was probably due to the new focus on the exploitation of wood resources in other regions of the Gulf of Mexico-Caribbean,[[12]](#footnote-12) such as Cuba, Louisiana, Venezuela, and New Granada. Wood continued being extracted for other purposes, as shown by the *asiento* signed by Don Joseph Jiménez in 1775 to supply fruit tree and cedar wood for the reconstruction of the Castle of San Juan de Ulúa in Veracruz.[[13]](#footnote-13) Similarly, the odd cargo of wood was sent to the metropolis, for instance three royal hulks (*Santa Rita*, *Visitación* and *Santa Polonia*) loaded with cedar seized from the private ship *Santa Ana*, which entered the harbour of Veracruz in September 1776 with an unregistered load of 309 *tozas* and 161 boards of cedar. The cargo, which came to a total volume of 1,782 square cubits, was sent to El Ferrol on behalf of the *Real Hacienda*.[[14]](#footnote-14)

Figure 16. View of a *tinglado* or *tillado*, where the boats and launches of the ships were built, faired, and painted in order to preserve all the cedar planking for use in the ships.



Source: Spain, Ministry of Defence. Archivo Histórico de la Armada sede "Elcano". *Diccionario demostrativo con la configuración...* (sheet 49).

**The 1783 order by the Secretary of the Navy, Antonio Valdés, to undertake large-scale felling in New Spain**

The most important event in the history of wood *asientos* in New Spain during the colonial period took place on 28 July 1783, when the Secretary of the Navy, Don Antonio Valdés (1783‑1795), sent Viceroy Don Matías de Gálvez y Gallardo (1783‑1784) the order to authorise large-scale cedar-felling operations on the coast of Veracruz, in order to supply the naval departments of Cádiz-La Carraca, Ferrol, Cartagena, and Havana.[[15]](#footnote-15) The purpose of the order was to boost Spanish naval construction and the wood trade between New Spain and the metropolis, so that:

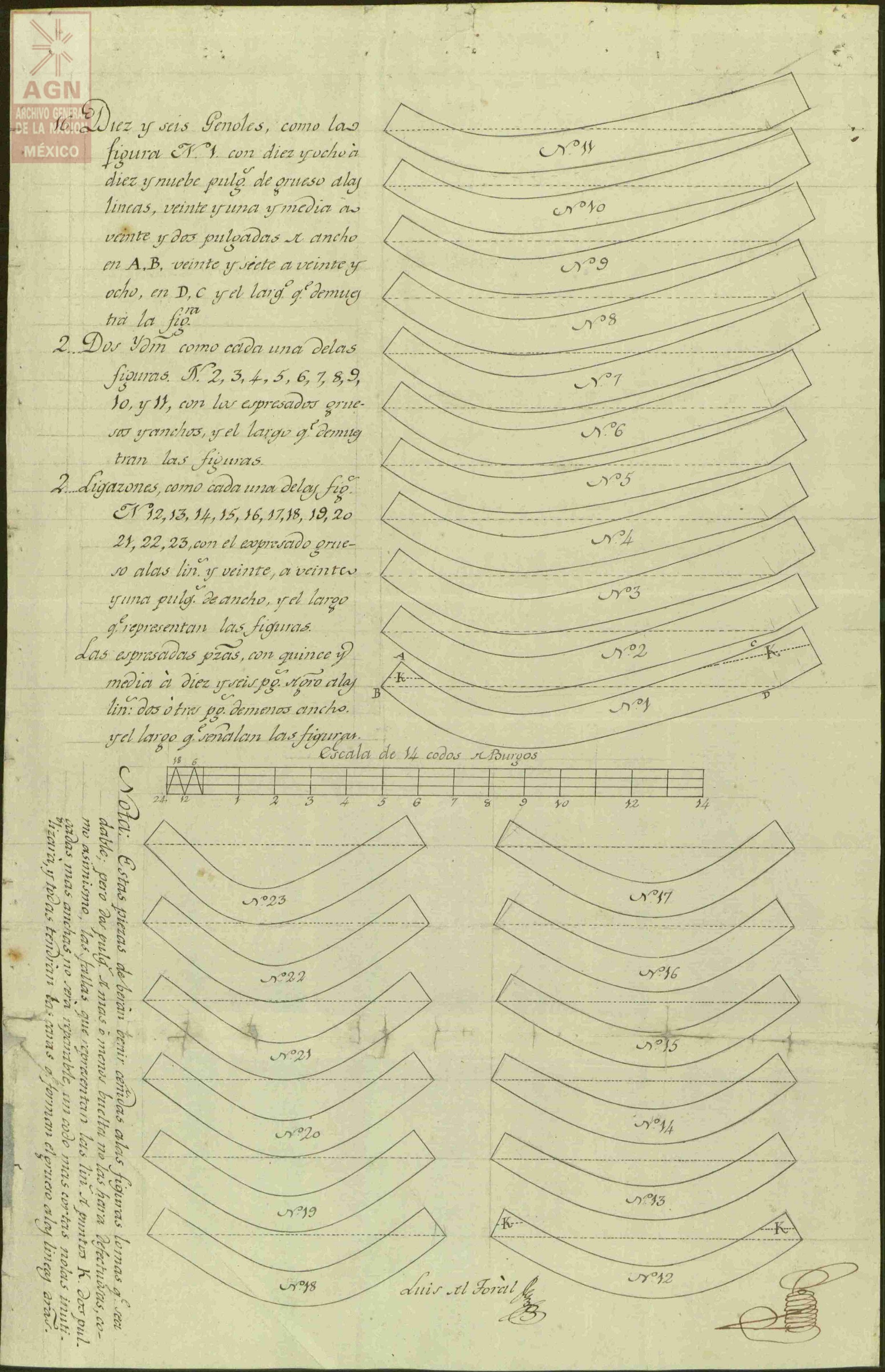
the number of our warships is increased and that the Navy is put in a tolerable footing, an essential condition for a Commercial Power whose possessions are scattered over the four parts of the world […], so that they can come in their defence whenever necessary, preventing them passing to foreign hands, as has happened all too often, [and] Powerful Navies interdicting trade and interrupting our navigation, which is the nerve of Monarchies. […] Great Britain, whose haughty and proud power leads her to call herself the Mistress of the Seas, tries to usurp the glory which is not hers, abusing her power and natural conditions […]. The Giant at last fell in the recent War,[[16]](#footnote-16) losing the glorious epithet at the hands of the powerful combined forces of the House of Bourbon […]. Expecting that England’s resentment will finally stew for long enough to push her to seek revenge, [the Bourbon Crowns] are reading themselves so that this does not catch [their fleets] unprepared, seeing that in the Thames and shipyards [the English] do not stop working, repairing their warships and building new ones.[[17]](#footnote-17)

The Secretary of the Navy set out nine points to be taken into account before granting an *asiento*. First, Valdés indicated that “contracts should consider the felling of trees and their transport to the embarkation point; the wood is to be examined so no poor-quality timber is accepted: once embarked and approved, the prices agreed will be paid”.[[18]](#footnote-18) Second, the assessment of the wood was to be undertaken by a qualified officer sent from Havana. Interestingly, this point also establishes that both *asentistas* and private persons could deliver wood at the embarkation point “without limitations”, which suggests that the *Marina Real* aimed to hoard as much wood as possible, as parts of cedar and other hardwoods were in short supply, without regard for the possibility that mass felling could lead to the deforestation of areas of Veracruz. Valdés also ordered the wood to be paid for at the embarkation point, after an expert had measured it. The third point addressed the transportation of masts and dressed pieces to Spain and Havana, in private or Navy ships, which was to be funded by the state. When transport fell to private vessels, the viceroy was responsible to negotiate the price, according to the volume of the cargo. The Secretary warned that all efforts should be made for transactions to be beneficial to the king and the *Real Hacienda*. The fourth point dealt with merchants who decided to send wood cargoes to Spain “on their private initiative”.[[19]](#footnote-19) The Navy was to retain the right of first refusal, but once this was renounced merchants had the right to freely sell parts, masting, and boards. The fifth point described the woods that had theretofore been used in naval construction, pointing out that the most useful for this purpose were “cedar, mahogany, *sabicú*, *chicharrón*, and *quiebrahacha*; but as the New Spain may contain others that can also be useful, let the responsible officials in Havana decide”.[[20]](#footnote-20) The sixth point explained that only the wood supervisor was to be in the king’s payroll, while the remaining labour – carpenters, woodmen, and hands – was to be paid by *asentistas* and private agents. Valdés admitted the possibility of paying bonuses to Navy officers to revise the cargoes and give guidance to the people working in felling areas or embarkation points. Points seven and eight declared these officers responsible for the quality of the wood sent. On the other hand, Viceroy Gálvez, as someone who “knows the country and its people”,[[21]](#footnote-21) was authorised “so that the King may use the excellent Woods of those Dominions, to use all means available to his discretion to provide them, giving as many privileges as necessary, as long as they are not detrimental to the *Real Hacienda*”.[[22]](#footnote-22) Finally, Secretary Valdés’s ninth point emphasised the need for constant communication between the viceroy and the king, to keep the latter abreast of the result of *asientos* and of the supply and price of wood. On 17 October 1783, the document was delivered to Viceroy Gálvez, who issued an order concerning wood *asientos* on 7 November.[[23]](#footnote-23)

In his order, the viceroy suggested sourcing the timber near the coast of Veracruz to expedite its delivery to Havana and the metropolis. To begin with, Gálvez requested a qualified official from Havana to survey the hills in the vicinity of the Alvarado and Coatzacoalcos rivers, as well as other suitable areas. A set of guidelines was to be published giving details of all the parts requested, including quality and size requirements. The viceroy ordered the governor of Veracruz to publish these instructions in all jurisdictions were felling was underway, so that all vassals “that wish to enter this business find in V.E. all necessary information; the transactions will be formalised by the royal officials in Veracruz”.[[24]](#footnote-24) The viceroy emphasised the importance of thoroughly assessing the quality of the parts on delivery, and authorised the purchase of parts to private agents, not only *asentistas*, provided that they met the requirements. In addition, Gálvez authorised the general attorney of Mexico to request a technician from Havana, whose salary was to be paid by the *caja real* of Veracruz, to supervise future felling operations. Finally, the viceroy asked for reports from the governor and the royal officials in the harbour of Veracruz, including price estimates and their view concerning the viability of the project.[[25]](#footnote-25)

On 31 December 1783, a committee formed by the governor and the royal officials of Veracruz set out the price of good cedar to between four and a half and five *pesos* per cubic cubit delivered at the harbour.[[26]](#footnote-26) In the first half of 1784, building technician Don Luis del Toral was sent from Havana to Tlacotalpan to meet interested private contractors. Soon after, the first *asientos* were awarded to José Jiménez, Esteban Bejarano, Pedro Moscoso, and Ramón Carvallo,[[27]](#footnote-27) who committed to deliver over 20,000 cubic cubits “of all kinds, from keels to stocks, according to the instructions and dimensions pointed out in the instructions set out by Don Luis del Toral”.[[28]](#footnote-28) An example of these guidelines are illustrated in the figure below.

Figure 17. Wooden *genoles* for the construction of ships designed by Del Toral with the details of each carved part.



Source: Archivo General de la Nación de México, Mapas, Planos e Ilustraciones (280), MAPILU/210100/4485 Genoles de madera construcción de buque (4211).

**The *asientos* awarded in Veracruz in 1784-1787**

The first four major *asientos*, granted to members of the Veracruz elite, confirmed the impressions of military engineer Miguel del Corral, who, during his survey of the region between the Alvarado and Coatzacoalcos rivers, found several areas with abundant wood that was suitable for naval construction. Apparently, del Corral’s suggestions were taken into account for these contracts. The *asientos* were granted to José Jiménez, Militia Captain at Tuxpan, on the leeward coast, who committed to deliver 10,000 cubic cubits, including all sort of parts in cedar and other hardwoods; Esteban Bejarano,[[29]](#footnote-29) *vecino* of Veracruz, whose order was for 2,000 cubic cubits of all sorts of parts and 50 knees of all varieties; Pedro Moscoso, resident of Acayucan, and Ramón Carvallo, *vecino* of Tlacotalpan, who committed to 4,000 cubic cubits of all sorts of parts in cedar.[[30]](#footnote-30) When the *asientos* had run their course, Luis del Toral wrote that a large volume of wood had been delivered in Veracruz between 1784 and 1786, but also that not all targets had been met, as the contractors had not come forth with all the requested parts, which was causing delays in the metropolitan shipyards.[[31]](#footnote-31) For this reason, in 1786 Carvallo, Moscoso, and Bejarano received new contracts for 7,500 cubic cubits of wood, and other dressed pieces, and a new one was signed with Don Francisco Sánchez de Burgos, subdelegate at La Antigua, who committed to deliver 3,500 cubic cubits of all sorts of parts in cedar.[[32]](#footnote-32)

The first *asiento* to be signed is of special interest, because the *asentista*, Don Ramón Carvallo, was already in possession of cedar trunks felled on the banks of the Papaloapan River and kept in storage in Tlacotalpan. The contract was signed by Don Joseph Serrano, Carvallo’s representative in Veracruz, who committed to deliver 4,000 cubic cubits of naval parts. The contract does not mention felling, referring only to transport and delivery. The contract binds the contractor to deliver in Veracruz the cedar woods that Don Luis del Toral had seen, and approved of, in Tlacotalpan. Carvallo had to foot the transport bill, but the *Real Hacienda* covered taking the timber out of the water and putting it in storage, for which tasks the royal officials used forced labour. The contract indicates that this operation had to be undertaken on arrival and under the supervision of royal officials, including del Toral, so that substandard pieces could be sent back. The *tozas* that passed the exam became the responsibility of the warehouse manager in Veracruz, and only then was payment to be made: four *pesos* and five and a half *reales*. Carvallo received an advance payment of 8,000 *pesos* to organise the delivery and transport and pay the necessary wages. The contract imposed a 5% *alcabala* tax on the *asentista* at the end of the transaction. This *asiento* is unique, in that the contractor already had the wood at his disposal and was confident that he could sell it to the Crown, as was eventually the case.[[33]](#footnote-33) Carvallo signed a second contract in August 1786, concerning dressed pieces, both boards and bends, of various sizes. The latter had to be between six and seven *varas* long, so they could be used in the constructions of ships-of-the-line and frigates.[[34]](#footnote-34)

In November 1787, the accountant of the *caja real* in Veracruz, Juan Matías de Lacunza, received a report from Luis del Toral concerning the wood that had been delivered at the harbour. The document notes that the pieces dressed by Carvallo had been dispatched to Cádiz (1,294 cubic cubits), Havana (190 cubic cubits) and El Ferrol (58 cubic cubits); the rest remained in Veracruz and some in Tlacotalpan. The cargoes setting sail to Cuba and the metropolis included various types of bend, clamps, *tozas* for planking, and boards.[[35]](#footnote-35) According to the report, the contract expired in 1786, but after August no wood was sent to the shipyards owing to shortages in both Navy and private shipping.[[36]](#footnote-36)

The second *asiento* was awarded to Don José Jiménez, who, as noted in previous sections, had been working with royal officials in Veracruz since the 1760s, first during the felling of wood for masting in Chimalapas and later when he signed a contract to supply wood for the reconstruction of the Castle of San Juan de Ulúa in 1775.[[37]](#footnote-37) The contract signed in 1784 was more detailed than Carvallo’s, and is accompanied by a cover letter in which the contractor made a series of concessions. First, he offered a 40% discount in ordinary knees, although few such parts were included in the contract, which was for a total of 10,000 cubic cubits. He informed that the trees were to be felled near the harbour of Tuxpan, where he lived, claiming that nobody else could cut down cedar or other woods suitable for naval construction in the area. The *asentista* suggested felling on both sides of the harbour and committed to dispatch the wood immediately after it was cut down. Interestingly, he committed to continue working even if war between European powers broke out. In addition, as a Militia Captain, he emphasised that his workmen and sailors would take military training. On the other hand, he requested the support of the province’s royal officials to recruit labour, which was, in his experience, not averse to running away after pocketing part of their wages. For this reason, he demanded that the governors of indigenous villages send him workers should he need them. The contractor mentions that efforts were to be made so that the parts complied with Don Luis del Toral’s size requirements, but also requested permission to deliver them in other sizes, not to waste wood that was already available.[[38]](#footnote-38) In this document, the contractor betrays a good understanding of forestry, tree species, and woodworking. For instance:

nobody doubts that, should everyone be allowed to choose the area freely […] and should woodmen be allowed to cut Wood at their discretion, they will look for those Trees which are easiest to fell, because as [they] are for their own purposes, which do not need particularly hard woods, they will go for the tenderest or youngest ones, and it necessarily follows that, in a few years, no Wood suitable for Construction will be found in that area [of Tuxpan], forcing contractors to go farther into the hills, where the greatest difficulty exists in terms of transport, making it impossible for them to reap the profit that they expect.[[39]](#footnote-39)

In another passage of his letter, Jiménez emphasised the need to protect woods suitable for naval construction, forbidding private persons and locals from felling them. This, he argues, was of the utmost importance for the Navy and the *Real Hacienda*, whose expenses inevitably increased with the additional cost of transport and shipping. He used Havana’s example; so much indiscriminate tree-cutting took place that to make the bottom of ships they had to begin bringing wood from elsewhere in Cuba and the Greater Caribbean, for instance Coatzacoalcos, Yucatan, New Orleans, and La Española, costing dear to the *Real Hacienda* in extraction, shipping, and transport costs.[[40]](#footnote-40)

It is interesting to note that, on 20 November 1776, the king had to create the *Junta de Maderas de Cuba*, whose creation was justified with the following argument:

His Majesty, being aware of the deterioration of cedar population in Cuba, caused by the excessive consumption of this material to make sugar crates; and given that no measure has been put in place to sort this problem, has decided to create in Havana a *junta*, with the participation of the Navy commander, the governor, and the intendents, which, heeding if they will the advice of factory owners, will forbid the use of cedar for making crates, and order the use of an equivalent wood.[[41]](#footnote-41)

The board was constituted by royal officials, including the governor, the Navy commander, the Navy commissar, and the Army and *Real Hacienda* intendents, as well as occasionally also by representatives of several political-economic sectors in the island. A conflict between the governor, Luis Unzaga, and the commander of the fleet and naval base, Juan Bautista Bonet, ensued, because the former defended the interests of residents and major sugar producers, who needed much wood to pack sugar and burn in their boilers, while Bonet argued in favour of the interests of the *Marina Real*, hoping to restore Havana’s prestige for shipbuilding while supplying metropolitan departments with Cuban cedar, mahogany and *sabicú*.[[42]](#footnote-42)

Going back to Captain Jiménez’s *asiento*, his concern for the forests of New Spain must be noted. He illustrated his point with the prohibition to cut oak, beech, holm oak, cork oak, and chestnut without authorisation, issued by Navy intendents in the metropolis in order to protect naval supplies. He claimed that his information about developments in Havana and Spain came from his collaboration with del Toral,[[43]](#footnote-43) and he used it cunningly to forward his contract: he argued that should prohibitions not follow and tree felling to leeward of Veracruz come under control, the situation witnessed by the windward coast of the Gulf of Mexico would repeat itself: “as it was and is ransacked, there is no wood left to be found”;[[44]](#footnote-44) wood used for naval construction, particularly, was hard to come by, owing to the reluctance of land owners, who tried to protect their forests.[[45]](#footnote-45) Jiménez also made some observations about the cedar available in the leeward and windward coasts; in the former, cedars were of the male kind, and of the female in the latter. According to carpenters, the latter type was more resistant and durable. His proposal also mentions the purchase of timber by small ships, for their own repairs or for resale in Europe, which suggests that wood was being illegally traded on the coast of Mexico, as confirmed by some works on contraband. Finally, the *asentista* pointed out that virgin forests which could be used for shipbuilding could still be found in the jurisdictions of La Antigua, Nautla, Tampico, and other districts on the road to Nuevo Santander, in the windward coast.[[46]](#footnote-46)

Table 46. Dimension of keels set out in Luis del Toral’s specifications for José Jiménez’s *asiento*

|  |  |  |  |
| --- | --- | --- | --- |
| Keels | from 23 to 24 inches thick | from 25 to 26 inches wide | from 20 to 22 cubits long |
| Keels | from 16 to 17 inches from thick | from 18 to 19 inches wide | from 17 to 18 cubits long |
| Aft keels | from 23 to 24 inches thick | from 25 to 26 inches wide on one head 30 or more inches on the other if the tree allows | from 21 to 24 cubits long |
| Aft keels | from 16 to 17 inches thick | from 18 to 19 inches wide on one head and from 25 to 27 inches on the other | from 17 to 18 cubits long |

Source: AGNM, Industria y Comercio, vol. 31, exp. 3, fs. 65-65v.

This contract, and the attached proposals to limit tree felling in the leeward and windward coasts of the Gulf of Mexico was passed to the royal officials in Veracruz, Miguel del Corral, Francisco Agudo, Matías de Lacunza, and José María Lazos, who questioned Jiménez’s monopoly over tree felling implied by his proposal. They, however, found his ideas concerning forestry management interesting. The committee insisted that it was important for wood only to be extracted at the time and place established by *asientos*, while forbidding private agents from cutting down young trees, especially concerning hardwoods such as cedar, mahogany and *sabicú*.[[47]](#footnote-47)

When José Jiménez’s *asiento* was eventually approved in September 1784, Del Toral gave him precise instructions, with drawings and samples (Figure A). The document is divided into three sections: “hard wood”, “straight wood” and “cedar wood”. The first section described keels, stems, heads, fore sleepers, stemsons, stern post knees, cheeks, standards, keelsons, transoms, cat-heads, large main posts, and timber and room of different lengths, width, and thickness. For instance, concerning keels (see Table 46):

these parts will have four flat faces; these dimensions, must not of necessity be applied to fresh edges throughout; even if the edges present some fail, as long as this can be fixed by shaving at least two inches off so that the new fresh edges meet the required dimensions, and not even in all faces, but in those in which rabbets will be open to fit the boarding.[[48]](#footnote-48)

In this passage and others that deal with the dressing of the parts, del Corral left some room for imperfection, arguing that not all parts that were not pitch-perfect needed to be rejected. In this, he was particularly referring to knots in the wood, which could debilitate it. Similarly, although these specifications did not mention tree species, it must be assumed that most of the parts came in mahogany and *sabicú*, the American woods in which the pieces listed in the order were typically made.[[49]](#footnote-49)

In the second section of del Toral’s instructions, he referred to “straight woods” to make main posts, back of stern posts, aft sleepers, binnacles, rudders, crosspieces, capsterns, quarter decks and fore castles, *tozas*[[50]](#footnote-50) for boards, sills, bowsprits, hold beams, sheet bitts, gunnel boards, quarter deck boards, thick stuffs, wales, binding strakes, decks, head ledgers, tillers, and anchor stocks of different lengths, widths, and thickness. Like in the previous section, del Corral gave indications about how to dress the wood:

* Dressing gunnel boards, thick stuffs and binding strakes, the thicker pieces will be as wide possible, so that the thinner ones are as wide as practicable;
* With tillers, the longest will be also the thickest, so that thickness and length go in proportion;
* Anchor stocks will be dressed on both sides.[[51]](#footnote-51)

The final section, entitled “cedar wood”, listed several parts, such as closed aft transoms, futtocks, *busardas*,[[52]](#footnote-52) knees, curves for the base of heads, square knees, quarters, top timbers, *contra aletas*,[[53]](#footnote-53) raised rungs, and horizontal rider rungs. Interestingly, del Toral recommended rungs to be made from trunks from which futtocks had been extracted first, in order to make the most of each trunk. Cedar was also used for *gambotas*[[54]](#footnote-54) for the sides and the middle of aft, futtocks, first, second, and third ribs, kevel heads, buts, whole beams, stocks for counter or side timbers, head timbers, and boarding.[[55]](#footnote-55)

Del Toral also roughly costed the pieces as a price guide for the *asiento*. For instance, the felling and dressing of hardwood for keels was costed at 50 *pesos*; preparing a path and hauling trunks overland at 150 *pesos*,[[56]](#footnote-56) and floating them downriver at 25 *pesos*; in terms of volume, keels fetched eight *pesos* and two *reales* per cubic cubit. He also costed hardwood wales and thick stuffs at 52 *pesos*, or five *pesos* and one *real* per cubic cubit. Concerning cedar, felling and dressing knees was priced at three *pesos*, overland hauling at 20 *pesos*, and floating downriver at two *pesos*; this amounted to four *pesos* and five *reales* per cubic cubit. Top-timbers were costed at 29 *pesos*, three *pesos* and one *real* per cubic cubit; *tozas* for planking were costed at 18 *pesos*, two *pesos* and five *reales* per cubic cubit. These price estimates were to be applied to all *asientos* signed after those granted to Carvallo, Moscoso, Bejarano, and Sánchez de Burgos.[[57]](#footnote-57)

In a report dated to 14 March 1785, after examining the wood delivered by José Jiménez to the royal warehouse in Veracruz, Luis del Toral acknowledged receipt of the following pieces:

* 1 aft closed stock;
* 3 futtocks;
* 5 first rungs;
* 11 second rungs;
* 6 third rungs;
* 1 kevel rung;
* 4 butts;
* 6 buttocks;
* 5 knees for first;
* 1 curve for second;
* 3 knees for para quarter deck;
* 2 pieces for head rails;
* 2 chains for counter or side timber stocks.

The size of these pieces were suitable for 60- and 70-guns ships of the line. Del Toral also found the following frigate parts in the warehouse:

* 1 raised rung;
* 4 first rungs;
* 17 second rungs;
* 3 third rungs;
* 1 *aleta*;
* 8 kevel rungs;
* 2 butts;
* 6 pieces for buttocks;
* 3 beams for first;
* 4 second knees;
* 8 knees for quarter deck;
* 3 for mess table knees.

Similarly, he counted 36 curved pieces for waterways, 216 straight pieces for sleepers, and 107 boards. In total, del Toral inventoried 470 dressed pieces, with a volume of 2,587 cubic cubits; however, he stressed how important it was to adjust to the prescribed sizes, because not all the parts delivered did it. For this load, the *asentista* was paid 10,000 *pesos* by the *Real Hacienda* in Veracruz.[[58]](#footnote-58)

Finally, in his 1787 report, del Toral reports that, of the wood delivered by José Jiménez, 1,263 cubic cubits of dressed hardwood and cedar were sent to Cádiz, 389 to El Ferrol, and barely 148 to Havana.[[59]](#footnote-59) Like with Carvallo, the *asentista* met his targets in 1786, when the rest of the wood was stored in Tuxpan and Veracruz before being dispatched to the metropolis and Havana.[[60]](#footnote-60)

In May 1785, the royal officials signed a contract with Esteban Bejarano for 4,000 cubic cubits of cedar from Acayucan, to be stored in Tlacotalpan. The contractor committed, first, to deposit 2,000 cubits of straight and curved *tozas* of different lengths and widths and 200 boards at a price, of two *pesos* and two *reales*, fixed by the *Real Hacienda*. Once the wood had been delivered, the contractor had to wait for Luis del Toral’s inspection before sending it to Veracruz. In order to meet felling and transport costs, Bejarano requested a down payment of 3,000 *pesos*, with the guarantee of a merchant from Veracruz called Antonio Rodríguez Robledo. Again, del Toral made an interesting technical suggestion: if the pieces of wood used for knees were left in the hills they would be lost, when they could be used for boards. The *asiento* was approved by the royal officials in Veracruz Miguel del Corral, Francisco Agudo, Matías de Lacunza, and Vicente José de Mora.[[61]](#footnote-61)

In the second contract, which was, in reality, the extension of the previous one, Bejarano committed to deliver 4,000 cubic cubits in two instalments of 2,000 cubits. The one-year contract was signed in late March 1786 and specified that the wood was to be sourced exclusively from the hills of Solcuautla, in the jurisdiction of Acayucan. This time, Bejarano gave assurances that the pieces would meet the detailed size specifications set out by del Toral: four keels for ships-of-the-line in *guapinol*, between 23 and 24 cubits long; one forefoot for a keel, between 18 and 20 cubits long; 100 standards for the first, second and third floor timbers (these made of cedar), of different lengths, between 4 and 8 cubits; *busardas* of different sizes, between 3.5 and a half and 8 cubits; futtocks between 10 and 12.5 cubits long; ship-of-the-line rungs between 9.5 and 11 cubits long, and for frigates, between 7.5 and 8 cubits long,[[62]](#footnote-62) and kevel rungs of different lengths (between 14 and 15 cubits for ships-of-the-line and between 7 and 7.5 cubits for frigates).[[63]](#footnote-63) In addition, del Toral ordered straight *tozas* over 12 cubits in length, and curved *tozas* at least 10 cubits long. Bejarano requested the price of water ways and sleepers to be adjusted to 32 *reales* per cubic cubit. The *asentista* also demanded a down payment of 8,000 *pesos* to begin work, with the same guarantor, Don Antonio Rodríguez Robledo, who was represented by Don Domingo Mirón. This second contract was approved by the junta of Veracruz on 28 March 1786.[[64]](#footnote-64) It is interesting to note that the pieces delivered by Esteban Bejarano through these two contracts were sent only to the naval departments of Cádiz (1,437 cubic cubits) and El Ferrol (369 cubic cubits).[[65]](#footnote-65)

Pedro Moscoso, Militia Captain in the province of Acayucan, signed his first contract in September 1785, aiming to deliver 4,000 cubic cubits of straight and curved *tozas* to the banks of the Michapa River, before they were sent to Veracruz, before the expiration of the agreement, ten months later. Moscoso requested a down payment of 8,000 *pesos* with the guarantee of Don Antonio Fernández, *vecino* of Veracruz. It is worth noting that Moscoso, like the other *asentistas*, was a member of the Veracruz elite. Unfortunately, little is known about these characters, although Álvaro Alcántara López managed to locate some of them, including Pedro Moscoso, in the jurisdiction of Acayucan. Earlier in his life, this contractor had been hired by Don Joseph Quintero, the influential owner of the hacienda of Cuatotolapan and leading merchant in Coatzacoalcos. This alliance helped Moscoso’s rapid promotion from treasurer to *alcalde mayor* in the province; later, he held the post of administrator of the salt and tobacco monopolies. In 1783, he helped his former patron in his dispute against the indigenous villages for the *realengo* lands of Acayucan, which he eventually added to his extensive estate.[[66]](#footnote-66) This demonstrates the *asentista*’s economic and political leverage in the province and the business advantages that it brought with it. In fact, in his contracts with the *Real Hacienda* and the governor of Veracruz, Bejarano recruited indigenous workmen illegally.[[67]](#footnote-67)

In this contract, Luis del Toral ordered 130 curved pieces for ships-of-the-line rungs, between 6 and 7 *varas* long, and 60 for frigates, between 4.5 and 6 *varas* long. The order also included water ways, buttocks, sleepers, and straight *tozería*, 8 *varas* long for four *pesos* and two *reales* per cubic cubit. This first *asiento* concluded with a partial delivery of the order to Veracruz while the rest were stored in the bar of Coatzacoalcos.[[68]](#footnote-68) The second contract was signed in June 1786, and it concerned the felling of *guapinol* hardwood in a place called Guasuntan, near a stream that fed into the Coatzacoalcos. Moscoso was ordered keels, forefoots, heads, fore and aft sleepers, stemsons, stern posts, backs of stern posts, main stocks, knees, curves, keelsons, knight heads, cat heads, main pieces of rudder, and main capstern, boards for port cells or port stills, top timber lines, and quarter decks, at a price of 18 *pesos* per cubic cubit. In addition, the order included straight and curved *tozas* for beams and water ways for four *pesos*, curved pieces (futtocks, piques, crovy foots, *busardas*) and, unsurprisingly, boarding for six *pesos*.[[69]](#footnote-69)

In his report, del Toral wrote that he had exchanged information with Moscoso about a type of wood found near the Coatzacoalcos River, which he called “caobilla”: “although this wood is not as solid as mahogany from Havana […] it will be put to some of the uses to which this is put”.[[70]](#footnote-70) Del Toral did not authorise felling these trees under the contract, but requested several *tozas*, up to 2 *varas* long, which were sent to Havana to be inspected by the shipyard’s carpenters. Moscoso’s second *asiento* met greater difficulties to deliver the order, and according to del Corral’s 1787 report, of the wood delivered in Veracruz, 1,952 cubic cubits were dispatched to Cádiz, 133 to El Ferrol, and 270 to Havana. Del Toral observed that 644 cubic cubits, part of the first contract, were still waiting in Coatzacoalcos; 109 cubits, delivered under the second contract, were sent to Cádiz, and 1,391 cubic cubits were still pending delivery.[[71]](#footnote-71)

Figure 18. Plan of the island and settlement of Tlacotalpan, an important site for shipbuilding and logging in the province of Veracruz (1786).



Source: Archivo General de la Nación de México, Mapas, Planos e Ilustraciones (280), MAPILU/210100/2452 Isla de Tlacotalpam, Ver. (2353).

**The balance of the wood *asientos* signed in New Spain (1784-1787)**

In his November 1787 report, Luis del Toral estimated the volume of wood sent to the naval departments in 5,083 cubic cubits. He also reported that 1,037 pieces were stored in the royal warehouse in Veracruz (Table 47).

Table 47. Inventory of woods delivered by asentistas in Veracruz (1787)

|  |  |  |  |
| --- | --- | --- | --- |
| Hardwood pieces | For ships-of-the-line | For frigates | Total |
| Forefoots | 1 | 4 | 5 |
| Keels | 1 | 2 | 3 |
| Stern posts |  | 3 | 3 |
| Main transoms |  | 1 | 1 |
| Heads |  | 2 | 2 |
| Keelsons | 1 | 2 | 3 |
| Pieces for tom timber lines | 1 | 1 | 2 |
| Straight wales | 1 |  | 1 |
| Bitts | 1 |  | 1 |
| Jear and top sail sheet bitts |  | 2 | 2 |
| Hatch beds |  | 1 | 1 |
| Anchor stocks | 3 | 7 | 10 |
| Tillers |  | 1 | 1 |
| TOTAL | 9 | 26 | 35 |
| Cedar pieces |  | | |
| Double *busarda* |  | 1 | 1 |
| Keelson knees | 1 |  | 1 |
| Knees for the second deck | 1 | 4 | 5 |
| Knees for quarter deck |  | 4 | 4 |
| Knees for mess tables |  | 6 | 6 |
| Rungs of all kinds, but not of different types | 297 | 203 | 500 |
| Curved sleepers |  |  | 122 |
| Butts | 2 |  | 2 |
| Buttocks | 14 | 17 | 31 |
| Straight *tozas* for planking |  |  | 272 |
| Boards |  |  | 93 |
| TOTAL | 315 | 235 | 1,037 |

Source: AGNM, Industria y Comercio, vol. 31, exp. 8, f. 176.

In the same document, del Toral specified how much wood was still pending delivery. Pedro Moscoso was 644 cubic cubits short from his first contract, and 1,261 cubits of hardwood and 6,000 cubits of cedar parts from the second; Esteban Bejarano still owed the *caja real* of Veracruz 2,427 cubits of cedar, from his second contract; Ramón Carvallo was 679 cubits of cedar short, also from his second contract; finally, Francisco Sánchez de Burgos had not yet delivered 3,500 cubits.[[72]](#footnote-72) These figures show that the earliest *asientos* were a relative success, because only in Moscoso’s case they had fallen short of the target. The subsequent contracts, including the first one signed by Sánchez de Burgos,[[73]](#footnote-73) all of which were signed in autumn 1786, were, however, more problematic, because the *tinglado* and the beaches of Mocambo could not receive any more wood. In fact, on 31 January 1787, the royal officials of Veracruz were banned from signing any new contracts and asked to simply supervise existing ones. This was caused by the bottleneck created in the storage areas, but also by payment issues; the navy intendent of Havana’s office, especially, was causing trouble because it was being charged for each cubic cubit of wood delivered to the naval department there.[[74]](#footnote-74)

The wood business, which was controlled by the Veracruz elite, should have generated a profit in the region of 78,000 *pesos de a ocho reales* for a total of approximately 30,000 cubic cubits of dressed cedar and hardwoods. Storage issues in Coatzacoalcos, Tlacotalpan, and Veracruz, in addition to the difficulties posed by the scarcity of ships ready to bring the wood to Spain from Veracruz, forced the contracts to be suspended and, eventually, cancelled in November 1787. Standing obligations, in terms of both wood and money, were gradually settled, but some of the contractors, for instance Bejarano and Sánchez de Burgos, were still requesting payment to offset their expenses in 1790, although the latter had, in the event, not delivered any wood at all.[[75]](#footnote-75) Several parts for 60- and 70-guns ships-of-the-line withered away in the sun and the rain, which are very detrimental for cut wood, in the beaches of Coatzacoalcos, Tlacotalpan, Tuxpan, and Veracruz. In February 1786, The *asentista* Esteban Bejarano wrote that: “the damage that the wood suffers at the beaches, with the wind and the sun that they catch if they are not sheltered, is plain for all to see, [and] I commit to store it myself and at my own cost, until the king’s ships arrive to the harbour [of Tlacotalpan] to take it to their final destination”.[[76]](#footnote-76) In view of this, the viceroy tried to make some use of these pieces and gave his authorisation to have them sold to private buyers, but this had little effect because the parts were conceived for ships-of-the-line and could not be fitted to build or repair smaller ships, like the ones used by merchants.[[77]](#footnote-77) The contractors also offered their help, selling parts and boarding to the private ships that arrived in Veracruz. In this way, José Jiménez sold 500 *pesos* in baulks and beams to Don Antonio Sáenz de Santa María, who used it in construction, a mast to be fitted as a rudder in the *San Pascual*, for 50 *pesos*, and a tiller to another ship for 23 *pesos*.[[78]](#footnote-78)

The *asientos* signed in the province of Veracruz are a good illustration of the sort of initiative taken by navy officials in the viceroyalty after the American War of Independence (1775-1783). Following this victory over Great Britain, the Hispanic Empire pushed forth with its rearmament policies to improve its defences against the British threat.[[79]](#footnote-79) In this context, the authorities in the colonies and the metropolis undertook a major project to supply cedar and hardwoods for naval construction to the naval departments of Havana, Cádiz, and El Ferrol. In all probability, the initiative was inspired by the surveys carried out by Miguel del Corral and his assistants in several regions of Veracruz, Oaxaca, Acayucan, and Coatzacoalcos in the 1770s. However, as noted, the project fell short of its target: of the 30,000 cubic cubits expected from the seven *asientos*, only 11,745 cubits and 229 cubic parts arrived at their final destination, that is, the royal shipyards; 5,193 cubits and 198 parts were left in the warehouse of Veracruz and the beaches and riverbanks near the felling areas.[[80]](#footnote-80)

Table 48. Amounts of wood delivered in Veracruz and sent to the naval departments in 1784-1787, according to del Toral’s estimates

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Asentistas** | **El Ferrol** | **Cádiz** | **La Habana** | **Veracruz** | **TOTAL** |
| **Cubic cubits and parts of 576** | | | | |
| José Jiménez | 383 and 51 | 1,263 and 570 | 148 and 144 | 1,043 | 2,837 |
| Esteban Bejarano, second *asiento* | 369 and 474  21 and 135 | 1,437 and 138  1,381 and 103 | 0  107 and 140 | 941  278 | 2,747  1,787[[81]](#footnote-81) |
| Pedro Moscoso, second *asiento* | 133 and 542  0 | 1,952 and 457  109 and 150 | 270 and 51  0 | 999  81 | 3,354  190 |
| Ramón Carvallo, second *asiento* | 58 and 274  61 and 374 | 1,294 and 48  2,391 and 251 | 190 and 375  164 and 554 | 1,038  702 | 2,580  3,318 |
| Francisco Sánchez de Burgos | 0 | 0 | 0 | 110 | 110 |
| **TOTAL** | **1,034 and 122 cubic parts** | **9,829**  **and 568 cubic parts** | **881**  **and 113 cubic parts** | **5,193**  **and 198 cubic parts** | **16,938**  **and 427 cubic parts** |

Source: AGNM, Industria y Comercio, vol. 31, exp. 8, f. 182.

Figure 19 shows the percentage of cedar and hardwoods dispatched to the naval departments of Cádiz, El Ferrol, and Havana during the operation of the *asientos* in New Spain. Cádiz received the lion’s share of the wood provided by Veracruz from 1784 to 1787, with over 83 %. This is unsurprising, because Cádiz was the main gateway between Europe and America throughout the 18th century.[[82]](#footnote-82)

It may thus be assumed that these cargoes were later redistributed among other naval departments, which is confirmed by the Navy intendent records in El Ferrol and Cartagena, where mentions exist to the use of American wood. For instance, on 18 March 1769, the department of Cádiz dispatched mahogany, anchors, and masting to Cartagena in a Dutch ketch. This responded to a request posed by master shipbuilder Guillermo Turner in January. The mahogany parts included twelve pieces for pump brakes, 17 cubits long; twelve pieces for tillers, 15 cubits long; 24 pieces for mainmast and foremast beams, 9 cubits long; twelve pieces for mainmast and foremast crosstrees, 12 long; twelve pieces for mizzen beams, 7 cubits long; and six crosstrees, 9 cubits long;[[83]](#footnote-83) on 29 February 1776, Cartagena-based officer Prisco Núñez wrote an inventory of the woods available, which included a column under the heading “Maderas de América”, with 103 pieces and *tozas* of *ácana*, mahogany, and cedar, and even some of *guayacán*.[[84]](#footnote-84)

Figure 19. Arrival of New Spanish wood to naval departments (1784-1787).

Source: Author’s own after AGNM, Industria y Comercio, vol. 31, exp. 8, f. 182.

Figure 20. Wood sent to naval departments and stored in Veracruz (1784-1787)

Source: Authors’ own after AGNM, Industria y Comercio, vol. 31, exp. 8, f. 182.

The small presence of the Havana shipyard (7.6 %) is interesting, suggesting that up to 1787 Cuba’s woodland reserves sufficed to meet the local naval construction demands; it must also be recalled that, in several occasions, the officials in Havana’s naval department remarked that Cuban woods were better than the New Spanish ones.[[85]](#footnote-85)

It has to be said that the attempt to use American timbers for naval construction, excluding Cuba, which was able to source much of its wood, did not reap as much reward as expected. This failure was mainly due to problems with transport, bringing the made pieces to the naval departments in Spain and Havana. The royal officials were aware of this problem, and pointed out that, owing to the lack of shipping, wood deliveries may have to wait until 1790.[[86]](#footnote-86) This led to the loss of many cubits of wood, abandoned in the hills, temporary *tinglados* on the banks of the Papaloapan and Coatzacoalcos rivers, and the beaches of Veracruz. Following the losses for the *Real Hacienda* in New Spain, the Crown decided to cancel the project and seek its wood elsewhere, such as New Orleans, which was used as a source for masting, and to increase the purchase of timber from northern Europe.

Finally, Map 10 illustrates the cabotage routes (black colour) through which wood was transported from the mouths of the rivers to the main ports of the Gulf of Mexico, like Veracruz and Campeche. In these places, the timber was shipped in the king's ships, rarely in the private vessels that transported it to the naval departments in the metropolis and Havana (yellow colour).

Map 10. Maritime routes used to transport wood from logging sites to main ports and then to Havana and the metropolis.



Source: Look4GIS-Lukasz Brylak based on QGIS software.

**Wood extraction areas under the jurisdiction of the Viceroyalty of New Spain in the second half of the 18th century. Examples from Cuba and Louisiana**

As noted, after the Spanish defeat in the Seven Years’ War, the Crown launched several reformist projects to strengthen the army and the navy. In the previous pages, the projects and *asientos* unfolding in continental New Spain have been presented. Charles III, however, also promoted initiatives in other regions of the wide jurisdiction of New Spain. The most important programmes took place in the region of the Greater Caribbean, specifically in Cuba and northern Louisiana, where New Orleans became an important source of wood.

**Use of Cuban wood by Havana’s shipbuilding industry**

As a result of its strategic location at the heart of the Spanish Empire in America, Cuba, especially Havana, turned into a key strategic position for the Spanish naval system of the *Carrera de Indias* in the 16th and 17th centuries,[[87]](#footnote-87) in both commercial and military terms.[[88]](#footnote-88) For this reason, an important shipbuilding tradition developed in Havana from the second half of the 17th century, facilitated by the excellent local woods, at a time when 90%-95% of the island was covered in woodland.[[89]](#footnote-89) Cuba’s was enormously rich in wood, including a wide variety of species. The most highly valued for civil, military, and naval construction were: cedar; *sabicú*; mahogany; poison ash; *yaba*; *ocuje*; *guayacán*; *quiebrahacha*; *guaraguao*; *jobo*; mulberry tree; copperwood; *maría*; *jagua*; *majó*; *balsa*; *guaba*; oak; and Caribbean pine.[[90]](#footnote-90) In addition to being used in ships, forts, houses, windows, doors, altars, and furniture, these woods were also highly coveted by the sugar industry, which used them as fuel and to build crates to pack the sugar.[[91]](#footnote-91) It is important to recall that, from 1763 to 1792, Cuba was the third largest cane sugar producer in the world, triggering the uncontrolled mass felling of virgin woods to expand sugar plantations. This drastically reduced the extension of the island’s woodlands, essentially because of the abrasive cultivation methods in use and the systematic clearing of forested areas. To make matters worse, after two or three crops the newly cultivated land became exhausted and was abandoned, arresting the natural regeneration of wild plants.[[92]](#footnote-92) This came on top of the ongoing struggle between sugar producers and the Navy for the use of wood. The problem became increasingly serious in the 1760s, prompting the organisation of the above noted *Junta de Maderas de Cuba* in 1776. However, the conflict between the sugar industry and the *Marina Real* over the use of wood continued well into the 19th century.[[93]](#footnote-93)

As noted, the root of the problem was the tug-of-war between sugar producers and the naval department in Havana, which in the early 18th century gained control of all woodland areas in the vicinity of its premises. This was confirmed by Act 13, Title 17, Book 4 of the *Recopilación de Indias* and by an order dated to 8 April 1748, which established the source areas and types of wood to be used in the construction of the king’s ships: cedar, *yaba*, *ocuje* and *guayacán*, within 40 leagues to leeward and windward of Havana, six leagues inland from the northern coast, and 20 from the southern coast.[[94]](#footnote-94)

Mass felling for naval construction began for the repair of the structure of the drydock in the shipyard of La Tenaza, destroyed during the British occupation of the harbour between August 1762 and April 1763.[[95]](#footnote-95) This was the beginning of a new phase of ship construction in Havana. From 1766, when Gautier entered service in the Spanish Armada and Matthew Mullan relocated to Havana to take charge of the shipyard, the Navy introduced important changes in the construction of ships-of-the-line and frigates. The following year, Charles III ordered Lorenzo Montalvo Avellaneda, Count of Macuriges, intendent of the navy in Cuba, to build four new ships-of-the-line a year in La Tenaza. In addition, the intendent, after consulting the fleet commander in Havana, Juan Antonio de la Colina, conceived the project of building a triple-decker ship.[[96]](#footnote-96) The project crystallised in 1769 with the launch of the 112-gun *Santísima Trinidad*, which, after some later modifications, became the largest warship in the world.[[97]](#footnote-97)

These political, economic, and military changes also affected wood sourcing by the Crown and the Navy. Wood *asientos* had been signed by members of the Havana commercial elite, which afterwards subcontracted the felling and transport operations, to the coast and, less often, to Havana itself, since the creation of the shipyard of La Tenaza in 1736. Between the 1760s and the 1780s, major contractors lost ground to smaller agents, such as Juan Blanco,[[98]](#footnote-98) José Hilario Pérez, José de Aguiar, Miguel Oteiza, José de Miranda, Manuel Barranco, and Alejo Méndez, who began forming a new commercial elite in Havana through their participation in the wood business and their connections with the Count of Macuriges.[[99]](#footnote-99) The *asiento* granted to Andrés Claro, who committed to supply *guayacanes* and mahogany pumps for the *Marina Real*, is a good illustration of the importance of these patronage networks. Initially, his proposal was rejected by the governor of Santiago de Cuba, Fernando Cagigal y García de Solís, II Marquis of Casa Cajigal, who was at loggerheads with Macuriges, but the latter’s pressure, in both Cuba and Madrid (he argued that these woods were in short supply), finally overcame the governor’s reluctance. He explained his support for Claro’s proposal in the following terms: “the king’s current need for these goods, and the orders that I have been given, force me to request, by all means necessary, this wood and all the rest that may be required for the construction of ships-of-the-line; […] the individual named above can deliver, and he commits to supply pumps and *guayacanes* to this shipyard for the established price”.[[100]](#footnote-100) The proposal was accepted in February 1767, and afterwards Andrés Claro made several deliveries to Havana; each mahogany pump was between 18 and 21 cubits long and 18 inches thick, fetching a price of 14 *pesos* each; each *vara* of *guayacán* was between 10 and 20 inches in diameter, and fetched a price of one *real* and a half (the customary prices set out in wood *asientos*).[[101]](#footnote-101) Claro’s contract was still in force in April 1769, when a letter to Macuriges from Navy officer Antonio Esquerra reported the arrival in Havana of sloops *Señora de la Soledad*, captained by Antonio Roye, and *Nuestra Señora de Rosario*, by Miguel Gutiérrez, both of which were owned by Agustín del Risco, the *asentista’s* partner. These ships were loaded with 200 *varas* of *guayacán* and 40 pump parts.[[102]](#footnote-102)

It is worth pointing out that most wood resources for the Havana shipyard came from the hills of central Cuba, the provinces of Sancti Spíritus and Camagüey, the province of Holguín, the region of Manzanillo, and the bay of Jagua, in the south and southeast of the island. These resources allowed the shipyard to build ships cheaper and faster, because the raw materials were closer to the workshops.[[103]](#footnote-103) As noted, mass felling for the Navy began in 1766. For instance, the royal officials organised a large-scale operation in the area of Jagua, which, according to the Armada officers, had enough cedar, mahogany, and *sabicú* to build 60 ships-of-the-line in Havana and the metropolitan shipyards. The region was thinly populated, so Macuriges and Colina decided to send a war officer to lead the expedition, along with a foreman, carpenters, and 50 pairs of oxen with their respective drivers. The operation was costed at 40,000 *pesos*. The project was endorsed by the Secretary of the Navy, Julián de Arriaga, on 18 August 1767, and the felling and first deliveries of wood in Navy hulks began a few months later.[[104]](#footnote-104)

Two years later, the Navy intendent ordered the survey and felling of 24,000 pieces of all kinds for the construction of 60- to 120-guns ships-of-the-line. Commander general Juan Antonio de la Colina, in his letters to Viceroy Croix in late 1769, mentioned that everything was ready to begin work, except for money, which was lacking.[[105]](#footnote-105) The problem was, therefore, shortage of funds and not of shipping, in contrast with New Spain. The department of Havana, despite having its own ships, developed extensive connections with local private skippers, commanding sloops, schooners, and even barges and bongos, which were actively involved in hauling wood; for instance, between 1766 and 1770, captains Mario José Germosilla, Julián Rodríguez,[[106]](#footnote-106) Joseph Castaña, Amaro López, Simón García, Esteban Rodríguez, Gregorio Melo,[[107]](#footnote-107) and Juan Sierra signed contracts to transport wood for the Navy.[[108]](#footnote-108)

**Garibaldo’s project as the model for state-sponsored exploitation of wood in Cuba**

Concerning the direct exploitation of Cuban wood by initiative of royal officials deployed in Havana, the project *Instrucción hecha por el contador de navío de la Real Armada, don Manuel Carlos Garibaldo para plantificar y establecer dos cortes de madera dura y de cedro con sus respectivos requisitos para construcción de dos navíos de 60 cañones*[[109]](#footnote-109) was handed to Viceroy Don Antonio María de Bucareli y Ursúa in 1777. In this project, the Navy accountant presented a programme for the supply of different types of wood for the construction of ships-of-the-line in the Havana shipyard. It is important to note that Don Manuel Carlos Garibaldo was a Cuban Creole who, between 1767 and 1770, made several visits to royal felling areas where the Navy sourced *ocuje*, *yaba*, mahogany, *sabicú*, cedar, and other species, and supervised the shipment of the cut wood to Yaguajay (now the National Park of Caguanes), in the province of Sancti Spíritus, and thence to the shipyards in Havana. The felling areas were located in the estates of Cayayues, Charco Hondo, Guanabanabo, and Yaguajay.[[110]](#footnote-110)

Garibaldo’s experience in the field and later as accountant for the Navy intendent allowed him to prepare a detailed *Instrucción*, divided into 42 points in three sections, which dealt with:

* Supplies such as nails, tools, animals, and food, as well as a chaplain and a surgeon; he also argued that a chapel and two barracks had to be built;
* Personnel and wages, mentioning the use of inmates in Havana prison as a potential source of labour;
* Exact measurements and amounts of hardwood (mahogany, *sabicú* and *yaba*) and cedar required for two 60-guns ships-of-the-line.[[111]](#footnote-111)

Some points are worth examining in detail. They illustrate the organisation of felling operations and can be used as a model for the way wood for naval construction was sourced in America. First, Garibaldo noted that it was important to set out a timeframe for the operation, which he estimated in 12-13 months in total (felling, dressing on site, and hauling to the rivers). He also recommended felling to begin between November and February, “to avoid the juices of said trees (cedar) making them rot later”.[[112]](#footnote-112)

Garibaldo made precise calculations of the wood requirements for the construction of two 60-guns ships-of-the-line: 3,877 parts for construction and 2,080 for boarding, lining, and freeboard of cedar. He also suggested cutting one third above requirements, for spare parts and to support construction works. He estimated that two ships-of-the-line would take 7,939 cedars, and that in order for the works to be finished in 12-13 months 462 cedars should be felled every month.[[113]](#footnote-113) In addition, these ships required 1,048 pieces of hardwood (*sabicú*, *yaba*, and mahogany); to provide for possible damage during transport, he increased the number to 1,223 trees, or 88 pieces per month.[[114]](#footnote-114) Once the trees had been felled, they would be dressed to make specific parts (hardwoods: keels, stern posts, back of the stern post, posts, feet, and other parts; cedar: planes, piques, futtocks, rungs and knees). All tasks were to be supervised by the construction assistant and the foremen responsible to keep all parts within the specified dimensions (length, thickness, and width).[[115]](#footnote-115)

The accountant also spelled out the duties of each worker; the minister commissar was responsible for:

cedars not to be felled outside the months of November, December, January, and February, no thinner nor narrower than half a *vara*. Each foreman will receive a list of the number of trees of each kind to be felled, and the parts and types that are required for the construction of two 60-guns ships-of-the-line so that they can keep on top of things punctually and no part is missing. Each month he must carry out an inventory of parts, oxen drivers and the rest of staff […]. Accounts must be clearly and punctually kept […] for the distribution of money to be kept abreast of production, so that every four months they can report to their superiors for the better management and so that the wood can be priced accordingly to the contract signed in this harbour by Francisco Franquis de Alfaro.[[116]](#footnote-116)

In addition, the minister commissar was in charge of public order and of preventing drunkenness, having the power to punish those who did not follow the rules.

Point 30 deals with assistants and foremen. They were responsible of the felling of trees in their assigned sectors and of informing their superiors of the number of trees felled. In addition, they were to supply the technical foremen with plans, figures, dimensions, and descriptions of each piece, following specifications. They were also to survey their surroundings regularly, to ensure that the trees were sufficiently thick, wide, and long, taking all necessary measures and supervising the work of foremen and carpenters to assess whether they were really earning their wages or not. They were to oversee the monthly delivery of dressed parts to the technical foremen, branding the parts as the king’s with a stamp marked “VR”. They also used a chisel to mark what part of the ship each piece was intended for, and to confirm delivery to the oxen drivers, who at that point became responsible for the safety of the wood.[[117]](#footnote-117)

Garibaldo also described the duties of the technical foremen and their assistants, who were to support the hands felling the trees and give priority to the pieces for which greater need existed according to the orders and plans supplied by the building assistant. Technical foremen were also to oversee the work of carpenters and made sure that no frivolous excuses were given to delay work. Every night, after dinner, they were to examine the pieces dressed in the course of the day and mark each part. At the end of the month, they presented a report to the minister commissar and the building assistant.[[118]](#footnote-118)

Garibaldo also set out the wages to be paid to each member of staff. Technical foremen were to be paid 16 *reales* per day; their assistants, 12 *reales*; cedar carpenters, seven *reales* (and had to buy their own axes and machetes); hardwood carpenters, nine *reales* (the *Real Hacienda* customarily provided their tools: axes and machetes); road foremen, 13 *pesos* per month, and *caminantes*, 12 *pesos*; callipers eight *pesos*; quartermasters (responsible for food supplies), 14 *pesos*; cooks, 12 *pesos*; oxen foremen, 35 *pesos*; their assistants, 25 *pesos*; smart hands, 14 *pesos*, like *ramajeros* and *recogedores* — if they were forced workers, only one *peso* per month. Workers were given shoes, ‘snowshoes’, and cloth tunics twice a year. Two barracks for the workers were to be built, including kitchen and pantry; another one outside the complex, for carpenters and *caminantes*, and another one for oxen drivers.[[119]](#footnote-119)

Finally, in his final point Garibaldo presented a series of tables with the pieces of cedar and hardwood required for the two 60-guns ships-of-the-line. In addition to the description of each part, these tables included the number needed of each, and the break-down of prices for on-site work and hauling, as well as total price. The prices suggested by Garibaldo follow Don Francisco Franquis de Alfaro’s above noted contract (Table 49).

Table 49. Wood parts required for two 60-gun ships-of-the-line in the Havana shipyard, according to Manuel Carlos Garibaldo’s 1777 proposal.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Hardwoods** | | | | | |
| Dressed piece | Number | Price for on-site work | Price for hauling | Price per piece | Total |
| Aft keels | 2 | 240 | 400 | 640 | 1,280.00 |
| Fore keels | 2 | 240 | 400 | 640 | 1,280.00 |
| Straight keels | 6 | 240 | 320 | 560 | 3,360.00 |
| Stern posts | 2 | 160 | 240 | 400 | 800.00 |
| back of the stern post | 2 | 80 | 160 | 240 | 480.00 |
| Feet | 2 | 240 | 320 | 560 | 1,120.00 |
| Heads or second feet | 2 | 160 | 240 | 400 | 800.00 |
| First inner posts | 2 | 160 | 240 | 400 | 800.00 |
| Second inner posts | 2 | 160 | 240 | 400 | 800.00 |
| Transoms | 2 | 160 | 240 | 400 | 800.00 |
| Standards or knees by that name | 2 | 80 | 120 | 200 | 400.00 |
| Aft sleepers | 4 | 160 | 176 | 336 | 1,344.00 |
| *Sobre durmientes* | 4 | 160 | 176 | 336 | 1,344.00 |
| Keelsons | 8 | 160 | 320 | 480 | 3,840.00 |
| Bitts | 8 | 48 | 96 | 144 | 1,152.00 |
| Cat heads | 4 | 40 | 64 | 104 | 416.00 |
| *Apostolaos* | 8 | 60 | 176 | 336 | 2,668.00 |
| Bolsters | 8 | 32 | 80 | 112 | 896.00 |
| Band knees | 12 | 48 | 80 | 128 | 1,536.00 |
| Head knees | 2 | 32 | 64 | 96 | 192.00 |
| Curved crossed wales | 50 | 32 | 80 | 112 | 5,600.00 |
| Straight crossed wales | 100 | 32 | 64 | 96 | 9,600.00 |
| *Cintas[[120]](#footnote-120) de choza de Vuelta* | 16 | 32 | 48 | 80 | 1,280.00 |
| *Cintas de choza derechas* | 100 | 24 | 40 | 64 | 6,400.00 |
| Carlings | 80 | 24 | 40 | 64 | 5,120.00 |
| Thick stuff | 250 | 20 | 30 | 50 | 12,500.00 |
| Oblique hold props | 40 | 16 | 24 | 40 | 1,600.00 |
| Straight hold props | 40 | 16 | 24 | 40 | 1,600.00 |
| Main piece of the rudder | 2 | 80 | 176 | 256 | 512.00 |
| Mahogany pumps, 17 cubits | 8 | 64 | 120 | 184 | 1,472.00 |
| Barrel of main capstern | 2 | 32 | 64 | 96 | 192.00 |
| Base of deck and quarter deck | 4 | 20 | 36 | 56 | 224.00 |
| Beds, hatches and y ledges | 160 | 12 | 16 | 28 | 4 480.00 |
| Main and fore bitts | 8 | 32 | 64 | 96 | 768.00 |
| Legs of main beams | 20 | 16 | 24 | 40 | 800.00 |
| Mizzen legs | 8 | 16 | 16 | 32 | 256.00 |
| Stocks of first anchors | 6 | 32 | 52 | 84 | 504.00 |
| Stocks of second anchors | 4 | 32 | 52 | 84 | 336.00 |
| Stocks of third anchors | 8 | 32 | 52 | 84 | 672.00 |
| *Sabicú* pieces for port cells | 32 | 64 | 160 | 224 | 7,168.00 |
| Transom knees | 8 | 80 | 120 | 200 | 1,600.00 |
| Standards knees | 2 | 80 | 120 | 200 | 400.00 |
| *Puercas* | 16 | 48 | 80 | 128 | 2,048.00 |
| TOTAL dressed pieces | 1 048 |  | | | |
| **Cedar wood** | | | | | |
| Dressed piece | Number | Price for on-site work | Price for hauling | Price per piece | Total |
| Lying planes | 90 | 24 | 32 | 56 | 5,040.00 |
| Raised planes | 30 | 24 | 32 | 56 | 1,680.00 |
| Futtocks | 26 | 24 | 40 | 64 | 1,664.00 |
| Piques | 12 | 24 | 40 | 64 | 768.00 |
| Futtocks | 400 | 16 | 24 | 40 | 16,000.00 |
| Second rungs | 400 | 16 | 24 | 40 | 16,000.00 |
| Third rungs | 400 | 16 | 24 | 40 | 16,000.00 |
| Fourth rungs | 400 | 16 | 24 | 40 | 16,000.00 |
| Kevel rungs | 400 | 16 | 24 | 40 | 16,000.00 |
| *Busardas* | 20 | 40 | 72 | 112 | 2,240.00 |
| *Horcazes para popa y proa* | 7 | 40 | 72 | 112 | 784.00 |
| Contra transoms | 6 | 32 | 48 | 80 | 480.00 |
| Chains | 6 | 32 | 64 | 96 | 576.00 |
| Bolsters | 24 | 16 | 40 | 56 | 1,344.00 |
| Curved water ways | 16 | 20 | 32 | 52 | 832.00 |
| Straight water ways | 32 | 32 | 64 | 96 | 3,072.00 |
| Quarter deck water ways | 16 | 36 | 56 | 92 | 1,472.00 |
| Curved sleepers | 24 | 24 | 56 | 80 | 1,920.00 |
| Straight sleepers | 24 | 32 | 80 | 112 | 2,688.00 |
| *Piezas para zafrán* | 2 | 32 | 48 | 80 | 160.00 |
| *Anguilas* | 12 | 32 | 48 | 80 | 960.00 |
| Main deck beams | 72 | 48 | 80 | 128 | 9,216.00 |
| Middle deck beams | 78 | 44 | 76 | 120 | 9,360.00 |
| *Baos de aire* | 46 | 44 | 76 | 120 | 5,520.00 |
| Quarter deck beams | 48 | 36 | 60 | 96 | 4,608.00 |
| *Latas para toldilla* | 36 | 24 | 32 | 56 | 2,016.00 |
| Main deck knees | 348 | 24 | 27 | 51 | 17,748.00 |
| Lodging knees | 144 | 16 | 32 | 48 | 6,912.00 |
| Open knees for middle deck beams | 120 | 16 | 24 | 40 | 4,800.00 |
| Knees for *llaves* | 120 | 16 | 32 | 48 | 5,760.00 |
| Knees for *baos de aire* | 120 | 16 | 32 | 48 | 5,760.00 |
| Quarter deck beam knees | 120 | 16 | 32 | 48 | 5,760.00 |
| Transom knees | 4 | 16 | 32 | 48 | 192.00 |
| Chain knees | 24 | 16 | 32 | 48 | 1,152.00 |
| Counter timbers | 20 | 16 | 40 | 56 | 1,120.00 |
| Jibbooms | 8 | 32 | 64 | 96 | 768.00 |
| *Contra aletas* | 8 | 24 | 32 | 56 | 448.00 |
| Beak of cut waters | 2 | 120 | 184 | 304 | 608.00 |
| *Piezas para leones* | 4 | 36 | 96 | 132 | 528.00 |
| Pieces for buttocks | 200 | 16 | 40 | 56 | 11,200.00 |
| Pieces for finishings and quarter pieces | 8 | 24 | 64 | 88 | 704.00 |
| TOTAL dressed pieces | 3,877 |  | | | |
| **Tozas** | | | | | |
| Dressed piece | Number | Price for on-site work | Price for hauling | Price per piece | Total |
| Cedar, 9 *varas* long, ¾ wide and ⅔ thick | 400 | 32 | 84 | 116 | 46,400.00 |
| Cedar 9 *varas* long, ⅔ wide and ½ *vara* thick | 400 | 24 | 64 | 88 | 35,200.00 |
| Cedar, ⅔ in square | 400 | 24 | 64 | 88 | 35,200.00 |
| Cedar, ½ *vara* thick in square | 500 | 16 | 48 | 64 | 32,000.00 |
| Cedar, 1 *vara* wide and ¾ thick | 100 | 48 | 94 | 142 | 14,200.00 |
| TOTAL *tozas* | 1,800 | 163,000.00 | | | |
| **Curved *tozas*** | | | | | |
| Dressed piece | Number | Price for on-site work | Price for hauling | Price per piece | Total |
| Cedar, ¾ wide and ⅔ thick | 80 | 32 | 84 | 116 | 9,280.00 |
| Cedar, ⅔ wide and ½ thick | 100 | 24 | 64 | 88 | 8,800.00 |
| Cedar, ½ *vara* in square | 100 | 16 | 48 | 64 | 6,400.00 |
| TOTAL curved *tozas* | 280 | 24,480.00 | | | |
| **Financial summary** | | | | | |
| Hardwood | | | | | 90,440.00 |
| Cedar wood | | | | | 387,340.00 |
| TOTAL | | | | | 477,780.00 |
| **Total 59,722.50 *pesos*. A 60-gun ship-of-the-line costs 29,861.25 *pesos*** | | | | | |

Source: AGNM, Indiferente virreinal, Marina, caja 4737, exp. 46, fs. 33-34.

The proposal was analysed by Antonio María de Bucareli in early 1778, but was rejected, because he did not want to allocate extraordinary funds to undertake public-funded felling operations in Cuba, as a number of private *asientos* were already underway.[[121]](#footnote-121) Although the project did not go further, Garibaldo’s proposal can be used as a guide for the organisation of felling operations, especially those carried out by the Navy. The *Instrucción* gives a clear idea of the logistical, financial, and labour challenges posed by these enterprises in Cuba and perhaps also in other American regions and the metropolis.

Despite the fact that no new ships were built during the American War of Independence (1779-1783), the period 1766-1789 was the most active for the Havana shipyards in the 18th century. The most significant among the many war and transport ships built during this period were several triple-deck ships-of-the-line, including the above noted *Santísima Trinidad* (1769) and, in the 1780s, *Mexicano* (1786), *Conde Regla* (1787), *Real Carlos* (1787) and the 112-guns *San Hermenegildo* (1789).[[122]](#footnote-122) This activity was framed by constant conflict with sugar landowners and internecine personal rivalries within the Navy. For instance, the replacement of Count Macuriges by Commander Bonet in 1772 triggered mutual accusations of misgovernment and complicity with the sugar lobby. Lorenzo Montalvo Avellaneda, for his part, wrote a document to defend his performance as intendent of Havana, claiming that fifteen ships of different kinds and eight brigantines had been built under his supervision: he also boasted of repairing 74 ships of different sorts, and of sending 7,000 *tozas* of cedar and mahogany and 27,000 of *guayacán* to the metropolis.[[123]](#footnote-123)

Despite these results, naval construction began to decline, both in the metropolis and in Havana, in the 1790s, in all probability as a result of financial difficulties derived from the enormous cost of keeping the Crown’s war machine in good order. In fact, several initiatives were put forward in the second half of the 18th century to find donations or credit to help cover these expenses. Between 1765 and 1799, the Cuban elite loaned 3,969,275 *pesos* to the *Real Hacienda* to fund naval construction in Havana.[[124]](#footnote-124) Similarly, in 1776, José de Gálvez asked the Viceroy Antonio María de Bucareli to organise a round of donations to increase the “number of warships in Spain and the West Indies”.[[125]](#footnote-125) By this initiative, the king’s subjects in New Spain collected 1,252,209 *pesos* in 1776 and 1777. Other significant contributions came from the *Tribunal de Minería* (300,000 *pesos*), the *Consulado de México* (300,000) and the Count of Regla (200,000).[[126]](#footnote-126)

The 1790s witnessed the end of Havana and Cuba’s central contribution to the resurgence of the Spanish Navy. The last of the major ships-of-the-line, the 112-guns *Príncipe de Asturias*, was launched in 1793. Afterwards, geopolitical conditions in Europe and America, naval war with Great Britain, and the crisis in the monarchy caused by Charles III’s death in 1788, as well as lack of funds, spelled the end of the erstwhile protagonist role played by the Havana shipyard for the Hispanic Empire.[[127]](#footnote-127)

**Illegal British timber felling operations in Cuba**

Illegal felling was a problem shared by all woodland areas in the Greater Caribbean, including such an important military enclave for Spain as Cuba. Most of the “woodland pirates” active in Cuba were British groups operating in the southern coast – regions of Manzanillo, Portillo, Macaca, and Ocujal – from their bases in Jamaica. After carrying out an inspection in these regions in October 1766, Lieutenant Bernabé Zubieta reported to the Marquis of Casa Cagigal, that he had seen “several English [sic] armed ships, [smuggling wood] in the coasts of Manzanillo and other regions”,[[128]](#footnote-128) as well as “felling trees with armed parties on land”.[[129]](#footnote-129) Zubieta claimed that this was a common occurrence, especially in the hills of Manzanillo, and that this damaged the forests, making them unusable for the *Marina Real*.[[130]](#footnote-130) The British had chosen this area because three leagues of thick woodland –rich in mahogany, cedar and *brasilete*– separated the coastal sand bar and the interior plain of Jarra; the forests, which in some areas began barely 70 or 80 *varas* from the coastline, had often been cleared with fire. From land, the illegal felling areas were visible from Cape Escalera, to leeward, to the mouth of the Gua River: between these areas and the Cove of Manzanillo, the smugglers’ sloops could moor without difficulty. The Governor of Santiago de Cuba, 2nd Marquis of Casa Cajigal, suggested the capital of the jurisdiction —Bayamo— to arrange a watch, and also for warships to patrol the sea. The governor pointed out that Lieutenant Bernabé Zubieta had tried to ambush the smugglers, but these attempts failed because the British had informants in the region, Spanish subjects who kept the British abreast of the presence of Spanish troops or militia. Zubieta reported that, when he arrived with his men “[the British] mocked us, setting sail to fell and smuggle elsewhere to either leeward or windward”.[[131]](#footnote-131) In January 1767, the 2nd Marquis of Casa Cagigal shared these reports with the Marquis of Croix, asking for financial assistance to pursue the smugglers in Manzanillo. The viceroy, however, rejected the petition, arguing that Cuba already received large funds for the Army and Navy. In consequence, the only reaction to the illegal felling operations was the permanent deployment of four militiamen and one captain in the bay.[[132]](#footnote-132) The situation remained the same until 1779, when Spain entered the American War of Independence and the widespread hostility toward the British brought these operations to an end, at least on a large scale. In the 1780s, British wood smugglers found new areas, in Walix (modern Belize), to illegally source hardwoods for naval construction and, especially, furniture.[[133]](#footnote-133)

**The wood business in Louisiana and New Orleans in the late 18th century**

Since they began building ships for the king, the shipyards in Havana faced wood supply issues, notably for ships-of-the-line. Cuban tropical forests yielded *guayacanes* and *marías*, but these were not the most suitable tree species, especially for mainmasts, foremasts, mizzens, and bowsprits. The right species could be found in Sierra Madre Oriental, in the provinces of Veracruz and Oaxaca, and, as noted, large felling operations were carried out in the 1760s and 1770s in the hills of Chimalapas; most of the pines felled in this region were dispatched to the shipyard of La Tenaza. However, as a result of the high felling and storage costs, as well as shipping shortages, these operations were cancelled in 1773,[[134]](#footnote-134) when the Navy intendents in Havana took an interest in Louisiana and the harbour of New Orleans as an alternative source of wood. The earliest reference to the use of masting from this region is dated to July 1782, when a cargo of pine masts and bitumen for the Navy set sail down the Mississippi River in the hulk *La Felicidad*.[[135]](#footnote-135)

The Navy began its own felling operations in the region in the summer of 1784, as confirmed by a letter, dated to 29 January 1785, which mentions the presence in New Orleans of 280 pieces of masting for the *Real Hacienda*; the operation had been overseen by Naval Lieutenant Juan Antonio Riaño, under the supervision of the intendent and the accountant in the province of Louisiana, Martín Navarro and Juan Ventura Morales, respectively.[[136]](#footnote-136) In the spring of 1786, the New Orleans-based merchants Nicolás Verbois, Santiago Jones, Pedro Bellim, and Esteban Watts proposed an *asiento* to supply the Cuban shipyard with masting in 1787. The proposal costed pieces of pine between 69 and 86 cubits long at 180 *pesos* each; between 30 and 68 cubits long, at six *reales* per foot; and the rest at four *reales* per foot. Francisco Xavier de Morales, fleet commander in Havana, accepted the proposal in October 1786, and felling began in April 1787.[[137]](#footnote-137) Meanwhile, Ignacio Lovio and Juan Baptista Macanti, residents of New Orleans, made an offer to supply ordinary and external boarding to the shipyard, and the fleet commander made an interesting observation: “if this boarding is as good as that which comes from the North, it would be cheaper for the Spanish shipyards; apart from the fact that the money would not leave H. M.’s dominions; it is worth comparing them in Havana”.[[138]](#footnote-138) The offer was, again, accepted, and the contract was in force throughout 1787.

The successful outcome of these early *asientos* encouraged Navy officers in Havana to keep a permanent commissioner in New Orleans to represent the institution in Louisiana. The responsibility fell to Ignacio Lovio, who in the following two years negotiated three contracts. The first was signed with Don Nicolás Verbois for the supply of masting to Havana during 1788, under the following conditions: 167 *pesos* and four *reales* for each piece exceeding 60 feet in length; and three *reales* per foot for smaller masts.[[139]](#footnote-139) The second *asiento* was signed with Asahel Levis, resident of Baton Rouge, in April 1788. The contract agreed the delivery in Havana, within a year, of the following parts: 1,000 boards, 3 inches thick, 12-14 inches wide, and 24-30 foot long; 1,500 external boards, 1 inch thick, 10-12 inches wide, and 24-30 foot long; and 5,000 ordinary boards of the same thickness and width, 12-14 foot long.[[140]](#footnote-140) In contrast with these two short-terms *asientos*, the contract signed by Lorenzo Sigur, from New Orleans, was for a 4-year period, beginning in February 1789. The *asentista* committed to supply Havana with masting, planking, and external boarding from Louisiana; pieces that were 78 and a half feet long, or longer, were costed at 160 *pesos* each, and shorter ones at three *reales* per foot. External boarding, between one and a half and three inches thick, was costed at six *reales* per foot; external boarding was costed at three *reales* per foot, and ordinary planking at two *reales* per foot.[[141]](#footnote-141) The proposals were accepted and yielded good results and kept a steady supply of pine wood for the Havana shipyards.

The success of these contracts prompted the Navy officers to organise a scientific expedition to Louisiana in July 1789. Navy Lieutenant Juan Antonio Riaño’s reports mentions the following valuable woods:

* *Red and white cypress*: Tree which grows everywhere in upper and lower Louisiana; there are two species, the red and the white […]. the Red is durable and heavy, and sinks in water when freshly cut. The white is very elastic and light but less durable than the other species, and these properties makes it appreciated for furniture and masting, also because it has fewer knots. Another species of cypress is known, different to these two. It is durable and close to incorruptible, light and it makes beautiful furniture. These three species are the most beautiful trees in Louisiana [...] they are well proportioned: the white Cypress is generally 4 foot in diameter and between 70 and 110 feet tall; it is the most suitable for the canoes that float on these rivers. These woods are invulnerable on sea and on land, and are often used in civil and naval construction; boarding, panelling, and larger pieces, like keeps and staves.[[142]](#footnote-142)
* *Pino*: it grows in the upper and the lower Louisiana; it is a first-rate tree, the woods are enormous, and it is of great value for the Navy, but it is very heavy and cannot compare to the cypress, because it does not last as long, so its main use is to produce pitch and tar.[[143]](#footnote-143)
* *Holm oak*: it grows in the highlands of lower Louisiana; it is incorruptible on land and very hard on water; it always grows crooked, but it is very apt for the construction of ships-of-the-line; there are trees so monstrous that a single branch can be the keel for an 80-guns ship.[[144]](#footnote-144)
* *Ash*: it is generally used for the kitchens.[[145]](#footnote-145)
* *Walnut tree*: the black walnut tree is appreciated to make boarding, furniture, and gun carriages.[[146]](#footnote-146)
* *Mulberry tree*: like the European kind, is used in carpentry.[[147]](#footnote-147)
* *Black poplar*: it is unsuitable for carpentry.[[148]](#footnote-148)
* *Cedar*: there are white and red cedars. The wood is nigh incorruptible, and the milk is bitter, so the worms do not attack it. Cedar could be used for naval building and for constructions that are exposed to the sun, water, and air. The branches are thick and it is about 30 or 40 foot tall.[[149]](#footnote-149)
* *Poplar*: it is used to build carts.[[150]](#footnote-150)
* *Sassafras*: the wood is suitable for carpentry, and in naval building it could be used for the superstructure, as it is light, durable, and resistant to exposure.[[151]](#footnote-151)
* *Sugar tree*: good wood for light carpentry, it is used for musket butts.[[152]](#footnote-152)

Despite the great interest of the navy department in Havana for Louisiana woods, the business slowly went into decline, because of the crisis that overcame the Navy from 1795. At that time, some cargoes with boarding and masting were still arriving, but in smaller quantities than in the 1780s.

**Wood sourcing projects elsewhere in the Greater Caribbean**

Private and Navy-promoted felling projects reached other American regions, for instance San Blas, El Realejo, Guayaquil, and Concepción-Chiloé, in the South Sea, as well as the woodland areas of Cartagena de Indias, Santa Marta-río Madalena and Trinidad-Cumaná, in the Caribbean coast (see Map 11).[[153]](#footnote-153)

The Caribbean was the source of different woods for the Compañía Guipuzcoana de Caracas, which had set up a cacao *asiento* in Venezuela in 1728. These woods, however, amounted to little more than a few mahogany pieces for rudders and anchor stocks, as well as some cedar for planking. In 1754, the Secretary of the Navy began taking an interest in the region’s woodland resources and considered the possibility of creating a shipyard in the island of Trinidad, with a wood supply base in Cumaná. This and another project presented in 1768, which merely concerned felling, were ruled out for economic and administrative reasons. However, the idea did not go away; for instance, in early 1773, the Navy sub-lieutenant Gerónimo Franco was sent to survey woodland in the Orinoco River, the coast of the Gulf of Paría, and the Island of Trinidad.[[154]](#footnote-154) A year later, an *asiento* was signed with Don Manuel Blanco to supply the metropolis with naval wood, including cedar and hardwoods from the area around Cumaná. This contract, however, met the opposition of the province’s governor, who disrupted felling operations and the transport of the wood.[[155]](#footnote-155) Finally, after some political developments, felling and deliveries could be resumed, as shown by a report dated to February 1779. The new governor, Máximo du Bouchet, reports the accumulation of dressed pieces of bullytree and nazareno for ships-of-the-line and frigates, pointing out that, after three months in the water, some pieces were beginning to show shipworm; the pieces buried in the sand, on the other hand, were in sound conditions. In April 1779, the king’s hulk *La Especiosa* was loaded with 360 parts, 181 for ships-of-the-line and 179 for frigates, to an estimated total of 1,841 cubic cubits. The report describes the width, thickness, length, and cubits of each piece, as well as the species out of which they had been dressed. Back of rudders, keels, *galimas* and boarding were of *nazareno*, *pardillo*, *maría*, cedar, male cedar, *guatamare*, *charo*, *paneque*, pink poui, *macao*, oak, *cacao cimarrón*, *caro*, *aco*, *araguaney*, laurel, *chupon*, carob tree and *cabima*. Finally, after loading all the pieces, the hulk left for Cádiz on 9 April 1779.[[156]](#footnote-156) Wood was still being sourced in the region in the 1780s, but less intensively, owing to transport issues; a number of pieces were lost for lack of shipping. In 1788, José María Chacón, governor of Trinidad, organised an expedition to the forests of the Orinoco, where they found wood suitable for naval construction. Owing to logistic problems and the high supply costs for the Navy, however, the exploitation of the woodlands of Trinidad, the Gulf of Paría, and Cumaná came to an end in the 1790s.[[157]](#footnote-157)

**Woodland areas in Cartagena de Indias and the Magdalena River**

Since it became the winter harbour for the Tierra Firme fleet in 1561, Cartagena de Indias turned into an important enclave for the repair of the ships running the *Carrera de Indias*. Generally, the wood for these repairs was sourced in the forests near the harbour.[[158]](#footnote-158) In the 18th century, Cartagena also became an important base for the Navy and the coastguards. From the 1760s to the 1780s, the main naval base in Tierra Firme was financially dependent from the department in Havana.[[159]](#footnote-159) Around this same period, the first ideas to source wood for the metropolitan arsenals in the region emerged. The first firm proposal was put forward by Don Juan Agustín Pardo, resident of Cartagena de Indias, in 1767; *pardo* offered “all manner of curved and straight parts from the city and its surroundings”.[[160]](#footnote-160) He pointed out that the cedar from Cartagena, the most durable in America, could be of great value to build or repair ships of the line and other vessels. He also committed to deliver the wood in Cádiz, for which he requested permission to buy a Swedish or Dutch hulk.[[161]](#footnote-161)

Although the proposal was not accepted, it opened the door to future projects and contracts, for instance one signed by the *Real Hacienda* and Don Antonio Segundo Mozin on 10 February 1776, for 2,000 pieces for construction, amounting to a total of approximately 30,000 cubic cubits, at 20 *reales* per cubit. The contract was for three years, and was signed under the guarantee of Don Manuel Josef de Vega, factor of the *Compañía de Negros y de* *Comercio de Cádiz*. The contractor and his partners committed to deliver no fewer than 700 dressed pieces per year. The felling took place on the banks of the Magdalena River, whence the rafts were sent to Cartagena de Indias via Santa Marta. The pieces had to be pitch perfect, without cracks or rot; the knees of felled trees were to be used to the utmost, and the wood was to be stored in the beach of Tinglado. Interestingly, the contract ruled out any down payments; all cash was to follow the delivery of the annual part quota. In contrast, the contract allowed the contractor and the *Real Hacienda* to sign other contracts outside the conditions agreed between the parts. An interesting clause bound the contractor to place “a white flag with the king’s arms in the felling area, to distinguish it from the areas where private agents operate”.[[162]](#footnote-162) This highlights the relevance of the agreement and the prestige attached to works undertaken on behalf of the king.

In autumn 1775, Manuel Josef de Vega sent three rafts from which the Navy officers selected 112 pieces of mahogany and cedar, which were stored under the shed. Fernando de Lortia, Navy brigadier and commander of the coastguard of Tierra Firme, wrote to Julián de Arriaga, Minister for the Navy, to say that he was waiting for two hulks that had left Cádiz to ship troops to Puerto Rico, which would touch in Cartagena on the return leg to collect the wood and take it to La Carraca. He reported that, by late May 1776, he should have more or less 800 pieces ready for the metropolis, while indicating that a bigger warehouse was needed.[[163]](#footnote-163) It is also worth pointing out that, during their patrols up and down the coast of New Granada in 1775, coastguard captains Francisco de Luna and Joaquín de Cañaveral had compiled information about the woodland between Portobelo and Santa Marta, and especially the jungle regions of the Darién, around Cartagena de Indias, and the Magdalena River.[[164]](#footnote-164)

According to the information provided by Captain Fidel de Eslava, sourcing wood in these regions was difficult, because access to good trees was hard and private felling mostly targeted the largest trees; in the Darién, this was compounded by the hostility of “barbarous Indians”.[[165]](#footnote-165) For these reasons, the merchants of New Granada were not particularly interested in the business. In the following years, Mozin’s contract kept running its course and new felling operations began in the regions of Sinú and Lorica, especially parts for repairs in Cartagena de Indias. In 1786, Juan Agustín proposed a four-year contract to supply 60,000 cubic cubits of dressed and curved pieces of cedar and hardwood.[[166]](#footnote-166)

Map 11. Places where the Spanish crown obtained wood, as well as those where inspections were carried out to discover more forests that could provide timber for shipbuilding.



Source: Look4GIS-Lukasz Brylak based on QGIS software.

1. Rafal Reichert, “¿Cómo España trató de recuperar su poderío naval? Un acercamiento a las estrategias de la marina real sobre los suministros de materias primas forestales provenientes del báltico y Nueva España (1754-1795),” *Espacio Tiempo y Forma. Serie IV, Historia Moderna* 32 (2019), 82. [↑](#footnote-ref-1)
2. “obras de reedificación de casas”. AGNM, Correspondencia de Diversas Autoridades, vol. 8, exp. 105, fs. 391-392. [↑](#footnote-ref-2)
3. Rafal Reichert, “Recursos forestales, proyectos de extracción y asientos de maderas en la Nueva España durante el siglo XVIII”, *Obradoiro de Historia Moderna* 28 (2019), 71. [↑](#footnote-ref-3)
4. AGNM, Industria y Comercio, vol. 10, exp. 2, f. 60. [↑](#footnote-ref-4)
5. [Alfred H. Siemens](https://historiamexicana.colmex.mx/index.php/RHM/article/view/2828#author-1) and [Lutz Brinckmann](https://historiamexicana.colmex.mx/index.php/RHM/article/view/2828#author-2) “El sur de Veracruz a finales del siglo XVIII”, 311. [↑](#footnote-ref-5)
6. [los Zapotes hacen el bien de los Indios, como que de ellos utilizan no solo en su estimable fruto con que se alimentan, sino en él de sus resinas y jugo de que sacan el que llaman chicle, en cuya cosecha fundan mucha parte de sus alivios y la paga de Tributo]. AGNM, Industria y Comercio, vol. 10, exp. 6, fs. 112-124v. [↑](#footnote-ref-6)
7. AGS, SMA Asientos, leg. 624. La propuesta de contrata de arboladuras. [↑](#footnote-ref-7)
8. AGNM, Industria y Comercio, vol. 10, exp. 5, f. 106v y AGS, SMA Asientos, leg. 624. La propuesta de contrata de arboladuras. [↑](#footnote-ref-8)
9. AGNM, Industria y Comercio, vol. 10, exp. 5, f. 107 and Siemens and Brinckmann, “El sur de Veracruz a finales del siglo XVIII”, 313-314. [↑](#footnote-ref-9)
10. Reichert, “Recursos forestales, proyectos de extracción y asientos de maderas”, 71. [↑](#footnote-ref-10)
11. AGS, SMA, Arsenales, leg. 351, oficio núm. 697. [↑](#footnote-ref-11)
12. The use of this composite term denotes the shared characteristics of the different territories in this geohistorical region, such as European colonisation, the use of African slaves, and a plantation-based economy. Other names that have been used to refer to the region are the Greater Caribbean and Circuncaribe. See: John H. Parry and Philip M. Sherlock, *A short history of the West Indies* (London-New York: Macmillan and St. Martin's Press, 1956); Sidney Mintz, *Caribbean Transformations* (Chicago: Aldine, 1974); Antonio Gaztambide-Geigel, “La invención del Caribe en el siglo XX”, *Revista Mexicana del Caribe* 1 (1996), 74-96; Johanna von Grafenstein, *Nueva España en el Circuncaribe, 1779-1808. Revolución, competencia imperial y vínculos intercoloniales* (Mexico: UNAM, 1997). [↑](#footnote-ref-12)
13. AGNM, Industria y Comercio, vol. 10, exp. 6, fs. 112-124v. [↑](#footnote-ref-13)
14. AGNM, Industria y Comercio, vol. 10, exp. 9, fs. 137-144. [↑](#footnote-ref-14)
15. Reichert, “Recursos forestales, proyectos de extracción y asientos de maderas”, 74. [↑](#footnote-ref-15)
16. The American War of Independence, in which Spain participated from 1779. [↑](#footnote-ref-16)
17. “aumento de los bajeles de Guerra y poner nuestras fuerzas marítimas en un pie respetable, indispensables a una Potencia Comerciante cuyos dominios se hallan dispersos en las cuatro partes del mundo […], para acudir con ellas siempre y cuando sea necesario a su defensa, estorbando [que] pasen a dominio extranjero como no pocas veces ha acaecido […], interrumpiendo nuestro comercio que es el nervio de las Monarquías por las poderosas escuadras enemigas, cuyos buques en los cruceros imposibilitaban nuestra navegación. […] La Gran Bretaña cuya potencia soberbia y orgullosa se denomina la Señora de los Mares intentando usurparse contra todo derecho esta gloria, abusando de su poder y natural situación […]. Cayó en fin este Gigante en la Guerra próximamente fenecida quitándole aquel glorioso epíteto que se habían apoderado [de él] las poderosas fuerzas combinadas de la Casa de Borbón […]. Así previendo que los resentimientos de la Inglaterra algún día se acumularan para satisfacer su enojo, [por eso las coronas borbónicas] intentan aprestarse y prevenirse en tiempo para que no les coja descuidadas [sus escuadras], viendo que en el Támesis y sus astilleros, [los ingleses] no cesan de trabajo, así en carena y composición de sus buques de Guerra como en la construcción de otros”. AGNM, Industria y Comercio, vol. 10, exp. 11, fs. 261-262. [↑](#footnote-ref-17)
18. “se formalice contrata par el derribo de árboles, y su arrastre hasta el paraje donde haya de embarcarse, capitulando que será reconocida la madera al tipo de su embarco, para no admitirse la que no sea de calidad: pero embarcada o reconocida por buena, se pagará a los precios que se estipulasen”. AGNM, Industria y Comercio, vol. 10, exp. 11, f. 248. [↑](#footnote-ref-18)
19. “por su cuenta y riesgo”. [↑](#footnote-ref-19)
20. “más útiles para aquel fin son cedro, caoba, sabicú, chicharrón o quiebrahacha; pero como puede haber en Nueva España algunas otras clases que también lo sean, se estará para su admisión a lo que diga el facultativo que se destine de La Habana”. AGNM, Industria y Comercio, vol. 10, exp. 11, f. 248v. [↑](#footnote-ref-20)
21. “aquel país y sus naturales”. [↑](#footnote-ref-21)
22. “la ventajosa idea de que el Rey se utilice de las excelentes Maderas que hay en aquellos Dominios facilitando los medios que hallare oportunos a su logro y proporcionado a los que quieran entrar en esta obra cuantos beneficios sean compatibles con el ahorro de la Real Hacienda”. AGNM, Industria y Comercio, vol. 10, exp. 11, f. 249. [↑](#footnote-ref-22)
23. AGNM, Industria y Comercio, vol. 10, exp. 11, fs. 247-249v and Reales Ordenes, vol. 3 exp. 37, fs. 51-54v. [↑](#footnote-ref-23)
24. “que quieran dedicarse a esta negociación, hallarán en V.E. cuanta protección que necesitasen y que para formalizar el ajuste y la contrata ocurran a los Oficiales Reales de Veracruz”. AGNM, Industria y Comercio, vol. 10, exp. 11, f. 250v. [↑](#footnote-ref-24)
25. AGNM, Industria y Comercio, vol. 10, exp. 11, fs. 250-251. [↑](#footnote-ref-25)
26. AGNM, Industria y Comercio, vol. 10, exp. 11, f. 253v. [↑](#footnote-ref-26)
27. Rafal Reichert “El transporte de maderas para los departamentos navales españoles en la segunda mitad del siglo XVIII”, *Studia Historica. Historia Moderna* 43, no. 1 (2021), 59. [↑](#footnote-ref-27)
28. “todas clases de madera desde quillas hasta cepos de anclas con arreglo al plan formado por el delineador de construcción, don Luis del Toral, con arreglos a sus dimensiones señaladas y en los reglamentos que se les entregaron”. AGNM, Industria y Comercio, vol. 31, exp. 5, f. 104v. [↑](#footnote-ref-28)
29. It is interesting to note that, according to the *Gaceta de México*, Esteban Bejarano was awarded a contract to build a brig in Tlacotalpan for 8,000 *pesos de a ocho*. The ship was launched on 21 February 1790 with the name *Nuevo Conde de Floridablanca*. Hemeroteca Nacional de México, *Gaceta de México*, 23 March 1790. [↑](#footnote-ref-29)
30. Reichert, “¿Cómo España trató de recuperar su poderío naval?”, 85. [↑](#footnote-ref-30)
31. AGNM, Industria y Comercio, vol. 10, exp. 11, f. 288. [↑](#footnote-ref-31)
32. Reichert, “¿Cómo España trató de recuperar su poderío naval?”, 85. [↑](#footnote-ref-32)
33. AGNM, Industria y Comercio, vol. 10, exp. 11, fs. 254-259v. [↑](#footnote-ref-33)
34. AGNM, Edificios públicos, tomo 41, exp. 10, fs. 151-183v and AGS, SMA, Asientos, leg. 637. Copia de contrata aprobada por el virrey de Nueva España con don Ramón Carvallo. [↑](#footnote-ref-34)
35. AGNM, Industria y Comercio, vol. 31, exp. 8, f. 182. [↑](#footnote-ref-35)
36. AGNM, Edificios públicos, tomo 41, exp. 10, fs. 151-183v. [↑](#footnote-ref-36)
37. AGNM, Industria y Comercio, vol. 10, exp. 6, fs. 112-124v. [↑](#footnote-ref-37)
38. AGNM, Industria y Comercio, vol. 10, exp. 11, fs. 261-264 [↑](#footnote-ref-38)
39. “ninguno duda que permitiéndose en los montes, que yo elija y prevea, que pueda hallar […] madereros que se ocupen en cortar Maderas para particulares, estos buscarán aquellos Arboles, que les sean más fácil su derribo, porque como quieran que [son] para fines, que los solicitan y no necesitan de mayor robustez, se aplicarán a aquellos que sean más tiernos, o de poca edad, siguiéndose de esto necesariamente que dentro de poco años, ya no podrá hallarse con facilidad en aquel paraje [de Tuxpan] u otro que destine Maderas de Construcción siendo preciso quizás ocurrir a lo anterior de la Montaña a donde la mayor dificultad o mayor trabajo en el arrastre imposibilite al Contratista dar la Madera con aquella equidad que de presente tiene prometido”. AGNM, Industria y Comercio, vol. 10, exp. 11, f. 264v. [↑](#footnote-ref-39)
40. AGNM, Industria y Comercio, vol. 10, exp. 11, f. 265. [↑](#footnote-ref-40)
41. “enterado S.M. del deterioro de cedros, que se experimentaba en la isla de Cuba por el excesivo consumo para cajas de azúcar; y no constando haberse verificado la providencia que para acabar con este inconveniente se resolvió que se formase en La Habana una junta integrada por el comandante de Marina, gobernador e intendentes, en que oyendo si les pareciese a algunos dueños de ingenios, acordasen la prohibición del uso del cedro proporcionando otra madera equivalente a la producción de cajas”. Orden real de 23 de mayo de 1772 cited by Miguel Jordán Reyes, *La deforestación de la Isla de Cuba durante la dominación española (1492-1898)* (Madrid: Universidad Politécnica de Madrid, 2006 [PhD dissertation]), 54. [↑](#footnote-ref-41)
42. José Manuel Serrano Álvarez, “Élites y política en el astillero de La Habana durante el siglo XVIII,” *Obradoiro de Historia Moderna* 28 (2019), 96-97. [↑](#footnote-ref-42)
43. As a Navy officer and responsible for measuring the wood, it is likely that del Toral knew about the ordinances published in January and December 1748, which were the basis of those published in 1762 and 1775. Pilar Pezzi Cristóbal, “Proteger para producir. La política forestal de los Borbones españoles,” *Baética: Estudios de Historia Moderna y Contemporánea* 23 (2001), 583-596. [↑](#footnote-ref-43)
44. “por haber sido y ser transitada y saqueada ahora carece de madera”. [↑](#footnote-ref-44)
45. AGNM, Industria y Comercio, vol. 10, exp. 11, f. 265. [↑](#footnote-ref-45)
46. AGNM, Industria y Comercio, vol. 10, exp. 11, fs. 266v-267v. [↑](#footnote-ref-46)
47. AGNM, Industria y Comercio, vol. 10, exp. 11, f. 269v. [↑](#footnote-ref-47)
48. “estas piezas tendrán sus cuatro caras rectas; las dimensiones que se señalan [Tabla A], no deberán con precisión tenerlas a esquina viva en toda su extensión, pues con las expresadas dimensiones aunque por sus cantos tengan algunas fallas, no serán defectuosas, siempre que estas sean en tales términos que quitadas a la pieza dos pulgadas a lo menos para dejarla en su perfección, pueda después quedar a esquina viva en toda su extensión, cuando no por todas sus caras precisamente por las en que deben abrirse los alefrices para recibir la tablazón”. AGNM, Industria y Comercio, vol. 31, exp. 3, fs. 65-68. [↑](#footnote-ref-48)
49. Gaspar de Aranda y Antón, “Las maderas de Indias,” *Asclepio* 45, no. 1 (1993), 217-248; Reinaldo Funes Monzote, *From Rainforest to Cane Field in Cuba: An Environmental History since 1492* (Chapel Hill: The University of North Carolina Press, 2008), 39-82; John T. Wing, *Roots of Empire. Forests and State Power in Early Modern Spain, c. 1500-1750* (Leiden-Boston: Brill, 2015), 193-199. [↑](#footnote-ref-49)
50. Large block of mahogany or cedar, as big as each individual tree can provide. [↑](#footnote-ref-50)
51. AGNM, Industria y Comercio, vol. 31, exp. 3, fs. 68-69v. [↑](#footnote-ref-51)
52. Eng. Breast-hook. [↑](#footnote-ref-52)
53. Eng. Fashion-piece. [↑](#footnote-ref-53)
54. Eng. Gounter timber or head timber. [↑](#footnote-ref-54)
55. AGNM, Industria y Comercio, vol. 31, exp. 3, fs. 69v-77. [↑](#footnote-ref-55)
56. For a distance of three leagues. [↑](#footnote-ref-56)
57. AGNM, Industria y Comercio, vol. 10, exp. 11, fs. 282-283. [↑](#footnote-ref-57)
58. AGNM, Industria y Comercio, vol. 31, exp. 3, fs. 78-79. [↑](#footnote-ref-58)
59. AGNM, Industria y Comercio, vol. 31, exp. 8, f. 182. [↑](#footnote-ref-59)
60. AGNM, Industria y Comercio, vol. 31, exp. 3, f. 91. [↑](#footnote-ref-60)
61. AGNM, Industria y Comercio, vol. 10, exp. 14, fs. 416-426v. [↑](#footnote-ref-61)
62. In this case, the set price was 38 silver reales per cubic cubit. AGNM, Industria y Comercio, vol. 31, exp. 6, f. 123v. [↑](#footnote-ref-62)
63. Del Toral also pointed out that, in order to reduce costs, double rungs could be made in the hills of Acayucan to be separated in the shipyard at a later date. AGNM, Industria y Comercio, vol. 31, exp. 6, f. 144. [↑](#footnote-ref-63)
64. AGNM, Industria y Comercio, vol. 31, exp. 6, fs. 122-155v. [↑](#footnote-ref-64)
65. AGNM, Industria y Comercio, vol. 31, exp. 8, f. 182. [↑](#footnote-ref-65)
66. Álvaro Alcántara López, “Redes sociales, prácticas de poder y recomposición familiar en la provincia de Acayucan, 1784-1802” in Antonio Ibarra and Guillermina del Valle Pavón (ed.) *Redes sociales e instituciones comerciales en el imperio español, siglos XVII a XIX* (Mexico: Instituto Mora, 2007), 236, 238-240. [↑](#footnote-ref-66)
67. AGNM, Justicia, tomo 183, exp. 28, fs. 134-136v. [↑](#footnote-ref-67)
68. AGNM, Edificios públicos, tomo 41, exp. 8, fs. 131-142. [↑](#footnote-ref-68)
69. AGNM, Industria y Comercio, vol. 31, exp. 5, fs. 103-109. [↑](#footnote-ref-69)
70. [aunque esta madera no es de la solidez de la caoba de La Habana no obstante […] la aplicara no para todos pero para algunos fines que se emplea la recia]. AGNM, Industria y Comercio, vol. 31, exp. 5, f. 109v. [↑](#footnote-ref-70)
71. AGNM, Industria y Comercio, vol. 31, exp. 8, f. 182. [↑](#footnote-ref-71)
72. AGNM, Industria y Comercio, vol. 31, exp. 8, f. 176. [↑](#footnote-ref-72)
73. This contractor made all preparations to begin felling, but at that point his contract was cancelled owing to the saturation of the beaches and the royal warehouse of Veracruz, which were full with the parts delivered by other *asentistas*. [↑](#footnote-ref-73)
74. AGNM, Industria y Comercio, vol. 10, exp. 11, fs. 320-323. [↑](#footnote-ref-74)
75. Reichert, “Recursos forestales, proyectos de extracción”, 75. [↑](#footnote-ref-75)
76. “es bien visible el daño y avería que reciben las maderas en la playa con los soles y vientos que cogen por falta de abrigo a efecto de evitarlo en esta parte. [y] me obligo a conservarlas en mi poder y de mi cuenta y riesgo hasta tanto que haya en el puerto [de Tlacotalpan] buques del rey que deban de conducirlas a su destino”. AGNM, Industria y Comercio, vol. 31, exp. 6, f. 124v-125. [↑](#footnote-ref-76)
77. Andrade Muñoz, *Un mar de intereses*, 95. [↑](#footnote-ref-77)
78. AGNM, Industria y Comercio, vol. 31, exp. 3, fs. 86-87v. [↑](#footnote-ref-78)
79. John H. Parry, *The Spanish Seaborne Empire* (Berkeley: University of California Press, 1990); José Merino Navarro, *La armada española en el siglo XVIII* (Madrid: Fundación Universitaria Española, 1981); John Lynch, *Bourbon Spain, 1700*-*1808* (Oxford: Basil Blackwell, 1989); Grafenstein, *Nueva España en el Circuncaribe, 1779-1808*; Carlos Marichal, *La bancarrota del virreinato. Nueva España y las finanzas del Imperio español, 1780-1810* (Mexico: FCE, 1999); Stanley J. & Barbara H. Stein, *Apogee of Empire Spain and New Spain in the Age of Charles III, 1759-1789* (Baltimore: Johns Hopkins University Press, 2003); Agustín Ramón Rodríguez González, *Trafalgar y el conflicto naval anglo-español del siglo XVIII* (San Sebastián-Madrid: Actas, 2005); Juan José Sánchez Baena, Celia Chaín Navarro & Lorena Martínez Solís (eds), *Estudios de historia naval: actitudes y medios en la Real Armada del siglo* *XVIII* (Madrid: Ministerio de Defensa, 2011); Manuel-Reyes García Hurtado (ed.), *La Armada española en el siglo XVIII: ciencia, hombres y barcos* (Madrid: Silex Ediciones, 2012); Allan J. Kuethe & Kenneth J. Andrien, *The Spanish Atlantic World in the Eighteenth Century. War and the Bourbon Reforms, 1713-1796* (Cambridge: Cambridge University Press, 2014); Torres Sánchez, *Military Entrepreneurs and the Spanish Contractor State*; Juan Marchena Fernández & Justo Cuño (ed.), *Vientos de guerra apogeo y crisis de la Real Armada, 1750-1823*, vol. II (Madrid: Ediciones Doce Calles, 2018). [↑](#footnote-ref-79)
80. AGNM, Industria y Comercio, vol. 31, exp. 8, f. 182. [↑](#footnote-ref-80)
81. Del Toral also listed 49 knees of all kinds. [↑](#footnote-ref-81)
82. Antonio García-Baquero González, *Cádiz y el Atlántico (1717-1778): el comercio colonial español bajo el monopolio gaditano* (Seville, Escuela de Estudios Hispano-Americanos, 1976); Guadalupe Carrasco González, *Comerciantes y casas de negocios en Cádiz, 1650-1700* (Cádiz: UCA, 1997); Ana Crespo Solana, “El patronato de la nación flamenca gaditana en los siglos XVII y XVIII: trasfondo social y económico de una institución piadosa”, *Studia Histórica, Historia Moderna* 24 (2002), 297-329; Manuel Bustos Rodríguez, *Cádiz en el sistema atlántico: la ciudad, sus comerciantes y la actividad mercantil (1650-1830)* (Madrid: Sílex Ediciones, 2005); Francisco Javier Lomas Salmonte, Rafael Sánchez Saus, Manuel Bustos and José Luis Millán Chivite (ed.), *Historia de Cádiz: entre la leyenda y el olvido* (Madrid: Editorial Sílex, 2005); Ana Crespo Solana, “Cádiz y el comercio de las Indias: un paradigma del transnacionalismo económico y social (siglos XVI-XVIII),” *e-Spania* 25 (2016), 1-28. [↑](#footnote-ref-82)
83. AGS, SMA Marina, Asientos, leg. 343, Nota de los géneros que se facilitan de este arsenal [Cádiz] para el departamento de Cartagena. [↑](#footnote-ref-83)
84. AGS, SMA Marina, Asientos, leg. 355, Relación de piezas de madera existentes en el arsenal de Cartagena. [↑](#footnote-ref-84)
85. AGNM, Correspondencia de Diversas Autoridades, vol. 41, exp. 67, fs. 316 y 316v. [↑](#footnote-ref-85)
86. AGNM, Industria y Comercio, vol. 10, exp. 11, fs. 375-376. [↑](#footnote-ref-86)
87. From 1561 the fleets of New Spain and Tierra Firme converged in Havana for the return voyage to the metropolis. Clarence Henry Haring, *Trade and Navigation between Spain and the Indies in the Time of the Hapsburgs* (Cambridge: Harvard University Press, 2014), 201-230. [↑](#footnote-ref-87)
88. Paul E. Hoffman: *The Spanish Crown and the Defense of the Caribbean, 1535-1585* (Baton Rouge and London: Louisiana State University Press, 1980); Allan J. Kuethe and José Manuel Serrano Alvarez, “El astillero de La Habana y Trafalgar,” *Revista de Indias* 67, no. 241 (2007), 764-765; José Manuel Serrano Álvarez, *El astillero de La Habana en el siglo XVIII: historia y construcción naval (1700-1805)* (Madrid: Ministerio de Defensa, 2018), 20-39. [↑](#footnote-ref-88)
89. Funes Monzote, *From Rainforest to Cane Field in Cuba*, 45. [↑](#footnote-ref-89)
90. Jordán Reyes, *La deforestación de la Isla de Cuba*, 23. [↑](#footnote-ref-90)
91. José Piqueras Arenas, “El azúcar en Cuba y las fuentes para su studio,” *América Latina en la Historia Económica* 6, no. 11 (1999), 35-47; José Jofré González, “The Sugar Industry, the Forests and the Cuban Energy Transition, from the Eighteenth Century to the Mid-Twentieth Century” in César Yáñez and Albert Carreras (ed.), *The Economies of Latin America* (Cambridge: Cambridge University Press, 2014), 131-146. [↑](#footnote-ref-91)
92. Funes Monzote, *From Rainforest to Cane Field in Cuba*, 82. [↑](#footnote-ref-92)
93. Reinaldo Funes Monzote, “Los conflictos por el acceso a la madera en La Habana: hacendados vs Marina” in José Piqueras (ed.) *Diez nuevas miradas de historia de Cuba* (Castellón: Publicacions de la Universitat Jaume l, 1998), 67-90; Serrano Álvarez, “Élites y política en el astillero de La Habana”, 96-97. [↑](#footnote-ref-93)
94. Archivo Nacional de la República de Cuba (hereafter ANRC), Intendencia General de Hacienda, leg. 377, orden 2. [↑](#footnote-ref-94)
95. Elena A. Schneider, *The Occupation of Havana: War, Trade, and Slavery in the Atlantic World* (Chapel Hill: University of North Carolina Press, 2018), 221-222. [↑](#footnote-ref-95)
96. Iván Valdez Bubnov, *Poder naval y modernización del Estado*, 372. [↑](#footnote-ref-96)
97. G. D. Inglis, “The Spanish Naval Shipyard at Havana in the Eighteenth Century” in *New Aspects of Naval History* (Baltimore: The Department of History U.S. Naval Academy, 1985), 47-58; José Manuel Serrano Álvarez, “La revitalización de La Habana en época de Lorenzo Montalvo, 1765-1772,” *Revista de Historia Naval* 105 (2009), 71-101. [↑](#footnote-ref-97)
98. He was the main *asentista* for the arsenal of Havana from 1755 to 1762. AGS, SMA Marina, Asientos, leg. 624. El intendente de Marina de La Habana acompaña los autos originales […] del asentista de maderas Juan Blanco. [↑](#footnote-ref-98)
99. Serrano Álvarez, “Élites y política en el astillero de La Habana”, 88-90. [↑](#footnote-ref-99)
100. “la necesidad que el Rey tiene de estos géneros en la actualidad y las ordenes con que me hallo, me obligan a solicitar por todos medios esta madera, y otras de aquellas que convienen a la construcción de navíos; […] el expresado individuo puede cumplir y se sujeta a proveer con abundancia este astillero de bombas y guayacanes, por los precios, y según las proporciones que se expresan”. [↑](#footnote-ref-100)
101. ANRC, Correspondencia de los Capitanes Generales, leg. 20, orden 60. [↑](#footnote-ref-101)
102. ANRC, Correspondencia de los Capitanes Generales, leg. 17, orden 96. [↑](#footnote-ref-102)
103. Reichert, “El transporte de maderas para los departamentos navales”, 56. [↑](#footnote-ref-103)
104. AGNM, Marina, tomo 26, fs. 169-170 and 228-229. [↑](#footnote-ref-104)
105. AGNM, Correspondencia de Diversas Autoridades, vol. 13, exp. 44, fs. 202-203. [↑](#footnote-ref-105)
106. ANRC, Correspondencia de los Capitanes Generales, leg. 26, ordenes 36 and 149. [↑](#footnote-ref-106)
107. ANRC, Correspondencia de los Capitanes Generales, leg. 27, ordenes 57, 83, 130 and 142 [↑](#footnote-ref-107)
108. ANRC, Correspondencia de los Capitanes Generales, leg. 30, orden 25. [↑](#footnote-ref-108)
109. AGNM, Indiferente virreinal, Marina, caja 4737, exp. 46, fs. 1-34v. [↑](#footnote-ref-109)
110. José Martínez-Fortún y Foyo and Humberto Arnáez y Rodríguez, *Diccionario biográfico remediano* (Havana: Ayuntamiento de San Juan de los Remedios, 1960), 56-57 [↑](#footnote-ref-110)
111. AGNM, Indiferente virreinal, Marina, caja 4737, exp. 46, fs. 4-34. [↑](#footnote-ref-111)
112. “no se experimente jugosidad competente de dichos arboles (cedro) para el logro de su sanidad y precaución de toda posterior podrición”. AGNM, Indiferente virreinal, Marina, caja 4737, exp. 46, f. 4. [↑](#footnote-ref-112)
113. AGNM, Indiferente virreinal, Marina, caja 4737, exp. 46, fs. 4v and 6. [↑](#footnote-ref-113)
114. AGNM, Indiferente virreinal, Marina, caja 4737, exp. 46, fs. 5 and 6v. [↑](#footnote-ref-114)
115. AGNM, Indiferente virreinal, Marina, caja 4737, exp. 46, f. 5v. [↑](#footnote-ref-115)
116. “no se tumben árboles de madera de cedro en otras menguantes que las de noviembre y diciembre, enero y febrero de cada año y que su grueso y ancho no baje de media vara. Que a cada capataz delineador se le entregara una relación que exprese el total número de árboles de una y otra madera que deban derribar y el de las piezas por clases que son precisas para la construcción de dos navíos de 60 cañones a fin que puedan arreglar la labor de ellas en términos que al año o antes la verifiquen sin que falte una. Ha de pasar revista general cada un mes a la maestranza, los boyeros y demás operarios que estén empleados en dichos cortes previstos […]. Debe llevar con cuenta claridad y prolijidad que da […] la respectiva distribución de caudales y de lo que vaya produciendo la labor y el tiro de las maderas a efecto de formar un tanteo cada cuatro meses y pasarlo a la superioridad para la mejor inteligencia y que se comprueben los buenos o malos efectos que resulten reglados a los precios de la madera por los que expresa la contrata que celebró en este puerto don Francisco Franquis de Alfaro”. AGNM, Indiferente virreinal, Marina, caja 4737, exp. 46, fs. 16-17v. Francisco Franquis de Alfaro was regidor in Havana and one of the Army and the Navy’s leading creditors. It is estimated that, between 1765 and 1800, he loaned 4 million *pesos* to these institutions. In exchange, he was granted *asientos* for the supply of wood, iron, copper, and other materials. José Manuel Serrano Álvarez, “Contratas militares en La Habana durante el siglo XVIII: riqueza local y visión imperial”, in *Memoria de la Terceras Jornadas de Historia Económica* (Mexico: Asociación Mexicana de Historia Económica-AMHE, 2015), 379. [↑](#footnote-ref-116)
117. AGNM, Indiferente virreinal, Marina, caja 4737, exp. 46, fs. 17v-19. [↑](#footnote-ref-117)
118. AGNM, Indiferente virreinal, Marina, caja 4737, exp. 46, fs. 23v-25v. [↑](#footnote-ref-118)
119. AGNM, Indiferente virreinal, Marina, caja 4737, exp. 46, fs. 9v-10. [↑](#footnote-ref-119)
120. Eng. Wale. [↑](#footnote-ref-120)
121. AGNM, Indiferente Virreinal, Marina, caja 4737, exp. 38, f. 2 [↑](#footnote-ref-121)
122. Serrano Álvarez, *El astillero de La Habana en el siglo XVIII*, 530. [↑](#footnote-ref-122)
123. Valdez Bubnov, *Poder naval y modernización del Estado*, 383-385. [↑](#footnote-ref-123)
124. Serrano Álvarez, “Contratas militares en La Habana durante el siglo XVIII”, 379. [↑](#footnote-ref-124)
125. “número de embarcaciones de guerra en la península y en Indias”. [↑](#footnote-ref-125)
126. Gillermina del Valle Pavón, *Donativos, préstamos y privilegios* (Mexico: Instituto Mora, 2016), 46-47. [↑](#footnote-ref-126)
127. Serrano Álvarez, *El astillero de La Habana en el siglo XVIII*, 500-526. [↑](#footnote-ref-127)
128. “diferentes embarcaciones inglesas armadas en las costas de los surgideros de Manzanillo y otras”. [↑](#footnote-ref-128)
129. “hacían cortes de maderas, poniendo gente en tierra armadas”. [↑](#footnote-ref-129)
130. ANRC, Correspondencia de los Capitanes Generales, leg. 15, orden 55. [↑](#footnote-ref-130)
131. “[los ingleses] se hallaron burlando, porque la embarcación se puso a la vela para hacer su corte y contrabando un poco más a Sotavento o a Barlovento”. ANRC, Correspondencia de los Capitanes Generales, leg. 22, orden 27. [↑](#footnote-ref-131)
132. AGNM, Correspondencia de Diversas Autoridades, vol. 11, exp. 32, fs. 156-158. [↑](#footnote-ref-132)
133. Samuel J. Record and Robert W. Hess, *Timbers of the New World* (New York: Arno Pr,1972), 236-245; Adam Bowett, “The Jamaica Trade: Gillow and the Use of Mahogany in the Eighteenth Century” *Regional Furniture* 12 (1988), 37-39; Adam Bowett, “The English Mahogany Trade 1700-1793” (London: Brunel University, 1996, [PhD dissertation]), 90-94, 132-137, 152-192; Michael Camille, “The Effects of Timber Haulage Improvements on Mahogany Extraction in Belize: An Historical Geography”, in *Yearbook Conference of Latin Americanist Geographers* 26 (2000), 103-115; Jennifer L. Anderson, *Mahogany: the costs of luxury in early America* (Cambridge: Massachusetts, Harvard University Press, 2012), 104-124. [↑](#footnote-ref-133)
134. AGS, SMA Marina, Asientos, leg. 351, Estado de arboladura existente en el embarcadero de Coatzacoalcos. [↑](#footnote-ref-134)
135. Archivo General de Indias (hereafter AGI), Santo Domingo, leg. 2609, documento núm. 125. [↑](#footnote-ref-135)
136. AGS, SMA Marina, Asientos, leg. 637. [↑](#footnote-ref-136)
137. AGS, SMA Marina, Asientos, leg. 637. [↑](#footnote-ref-137)
138. “si esta tablazón fuese de tan buen servicio como este del Norte, saldría más barata que aquella en los arsenales de España; y por descontado no se extraía su importe fuera de los dominios de S.M. convendría pues mandar hacer en la Habana alguna prueba de comparación”. AGS, SMA Marina, Asientos, leg. 637. [↑](#footnote-ref-138)
139. AGS, SMA Marina, Asientos, leg. 637. [↑](#footnote-ref-139)
140. AGS, SMA Marina, Asientos, leg. 637. [↑](#footnote-ref-140)
141. AGS, SMA Marina, Asientos, leg. 637. [↑](#footnote-ref-141)
142. “Árbol que crece en todos los parajes de la Luisiana alta y baja hay de dos especies, colorado y blanco […]. el Colorado dura mucho, es muy pesado, porque se va al fondo del agua cuando esta recientemente cortado. El blanco es muy elástico y ligero, pero de menos duración que la otra especie, es el más estimado para obras de carpintería y arboladura por sus propiedades, como igualmente por ser menos nudoso. Se conoce también otra especie de ciprés, cuya misma no va por ser igual a las dos citadas. Es muy durable y cuasi incorruptible, ligero y propio para muebles que son muy bellos y hermosos. Las tres especies son los más bellos arboles de la Luisiana [...] son bien proporcionadas: el Ciprés blanco es comúnmente de 4 pies de diámetro y de 70 a 110 pies de altura: es el árbol más propio y que más comúnmente se emplea para construir las piraguas y canoas que navegan estos ríos. La madera de estas especies de Árboles es invulnerable en la tierra y en agua, se emplea generalmente tanto en construcciones civiles y navales: tablas, tablero, y piezas más grandes, tajamares y duelas”. [↑](#footnote-ref-142)
143. “crece en la alta y baja Luisiana, es árbol de primera magnitud, los bosques son inmensos, de gran uso en la armada naval, pero es muy pesado, y no iguala al Ciprés pues dura muy poco tiempo, por lo que el principal uso es para sacar brea y alquitrán”. [↑](#footnote-ref-143)
144. “crece en los países altos de la Baja Luisiana, es incorruptible en la tierra, y en el agua durísimo; crece siempre torcido pero en muy propio para la construcción de navíos y hay árboles tan monstruosos que una sola rama puede dar principal curva de un navío de ochenta cañones”. [↑](#footnote-ref-144)
145. “generalmente se usa para las cocinas”. [↑](#footnote-ref-145)
146. “el nogal negro muy estimado para hacer tablas y piezas propias para muebles y soporte de armas”. [↑](#footnote-ref-146)
147. “es el mismo que en Europa y se usa para obras de carpintería”. [↑](#footnote-ref-147)
148. “poco apropiado para obras de carpintería”. [↑](#footnote-ref-148)
149. “hay blanco y colorados. La madera es casi incorruptible, su leche amarga lo que impide que los gusanos la ataquen. El cedro podría emplearse en la construcción de barcos y otras obras expuestas al sol, agua y aire. Tiene gruesas ramas y su altura es de 30 a 40 pies”. [↑](#footnote-ref-149)
150. “se usa para obras de carretería”. [↑](#footnote-ref-150)
151. “la madera es muy propia para carpintería de blanco se podrá emplear en la arquitectura naval para las obras muertas por ser ligera y dura mucho expuesta al aire”. [↑](#footnote-ref-151)
152. “buena madera para carpintería blanca, se usa para montarías de fusiles”. ANRC, Junta de Fomento de la Isla de Cuba, leg. 179, orden 8211. [↑](#footnote-ref-152)
153. Michael E. Thurman, *The Naval Department of San Blas: New Spain's Bastion for Alta California and Nootka 1767 to 1798* (Glendale: Arthur Clark Co., 1967), 57-60; Lawrence A. Clayton, *Los astilleros de Guayaquil colonial* (Guayaquil: Archivo Histórico del Guayas, 1978); María Laviana, *Guayaquil en el siglo XVIII. Recursos naturales y desarrollo económico* (Seville: EEHA, 1987); De Aranda y Antón, “Las maderas de Indias”, 217-248; Carlos Martínez Shaw and Marina Alfonso Mola, “Los astilleros de la América colonial” in Alfredo Castillero Calvo and Allan J. Kuethe (eds) *Historia general de América Latina* vol. 3 part 1 (Madrid: Editorial Trotta; Paris: Ediciones Unesco, 2001), 279-304; Valdez Bubnov, *Poder naval y modernización del Estado*, 336, 376-379; Wing, *Roots of Empire*, 198-199; Guadalupe Pinzón Ríos, *Hombres de mar en las costas novohispanas. Trabajos, trabajadores y vida portuaria en el Departamento Marítimo de San Blas (siglo XVIII)* (Mexico: UNAM, 2018), 136-144. [↑](#footnote-ref-153)
154. Museo Naval de Madrid (hereafter MNM), leg. Ms. 126, fs. 244-268. [↑](#footnote-ref-154)
155. AGS, SMA, Asientos, leg. 352, Asiento de don Manuel Blanco. [↑](#footnote-ref-155)
156. AGS, SMA, Asientos, leg. 362, Madera de Cumaná. [↑](#footnote-ref-156)
157. Archivo General de Marina “Álvaro de Bazán” (hereafter AGMAB), Expediciones a Indias, leg. 07.113. [↑](#footnote-ref-157)
158. Haring, *Trade and Navigation between Spain and the*, 201-203; Enrique Marco Dorta, *Cartagena de Indias: puerto y plaza fuerte* (Bogotá: Fondo Cultural Cafetero, 1988), 34-36; Martínez Shaw and Alfonso Mola, “Los astilleros de la América colonial”, 290-292; Sergio Paolo Solano de las Aguas, “El Apostadero de la marina de Cartagena de Indias, sus trabajadores y la crisis política de la Independencia”, *Economía & Región* 9, no 1 (2015), 209-243. [↑](#footnote-ref-158)
159. Valdez Bubnov, *Poder naval y modernización del Estado*, 393-397. [↑](#footnote-ref-159)
160. “todo género de maderas de construcción de vuelta y derecha en dicha ciudad y sus inmediaciones”. [↑](#footnote-ref-160)
161. AGS, SMA, Asientos, leg. 624, Madera de Cartagena de Indias. [↑](#footnote-ref-161)
162. “poner en los sitios donde establezca la corta, la bandera blanca con el escudo de armas del Rey para distinguirlo de los lugares en que cortan los particulares”. AGS, SMA, Asientos, leg. 624, Asiento de don Antonio Segundo Mozin. [↑](#footnote-ref-162)
163. AGS, SMA, Asientos, leg. 624, Al comandante de guardacostas de Tierra Firme. [↑](#footnote-ref-163)
164. AGS, SMA, Asientos, leg. 352, El comandante de guardacostas don Fidel de Eslava. [↑](#footnote-ref-164)
165. “indios bárbaros”. [↑](#footnote-ref-165)
166. AGMAB, Arsenales, Maderas, leg. 3774. [↑](#footnote-ref-166)