



1. Type of Project: Research.

2. Location of Project: Templar Channel, Clayoquot Sound.

3. Scope: Research.

A. Research

In April of 2003 commercial crab fisherman Darin Bostrom informed local Tofino diver Gilgamesh Palm that he had fouled two of his traps at a location in Templar Channel, Clayoquot Sound. On diving to investigate the obstruction and retrieve the traps Mr. Palm noted that the trap lines were entangled around a piece of metal, protruding from the seafloor approximately 0.75m.

After retrieving the traps, Mr. Palm secured a line and marker buoy to the object and returned to Tofino, where he informed his father, Roderic S. Palm, of the find.

On April 25th 2003 Palm senior returned to the site of his son's discovery. He quickly concluded that the object was probably the straight arm of a wrought iron anchor, the fluke of which had corroded away, leaving a flat ridge where it had once been. Mr. Palm hand-excavated approximately 0.30m down the anchor arm where he felt what he concluded to be the anchor's shank, along with two more crab traps.

Clayoquot Sound and in particular Templar Channel had been a popular anchorage for trading vessels during the fur trade era, given its' close proximity to the Tla-o-qui-aht First Nation villages of Echachis (see **Fig. 1**), Clayoquot and Opitsat. The anchorage is mentioned in the literature a number of times including John Meares *Felice Adventurer* 1788/89, John Kendrick, Robert Gray, Robert Haswell *Columbia Rediviva & Lady Washington* 1788/89 & 1791/92, Manuel Quimper *Princesa Real* 1790, James Colnett *Argonaut* 1790/91, Francisco Eliza *San Carlos* 1791, William Brown *Butterworth* 1792, Josiah Roberts *Jefferson* 1793 and Charles Bishop *Ruby* 1795. Only one fur trade era vessel is known to have been lost in the immediate vicinity of the Templar Channel anchorage. This was the Pacific Fur Company's ship *Tonquin* (Lt. Jonathon Thorn, USN) that was sunk there in early June of 1811 as a result of a violent interaction between the vessel's crew and warriors of the Tla-o-qui-aht First Nation. Some researchers have alluded to a report "from the natives" of "AN UNKNOWN, unnamed American vessel" being lost at Clayoquot in the year 1808, however most historians and scholars of the maritime fur trade attribute this unsubstantiated and inconclusive account as an erroneously dated reference to the *Tonquin* affair.



Fig. 1: 1789 sketch showing Templar Channel & anchorage off Echachis (Meares)

On May 12th 2003 Palm returned to the site with a light duty dredge intending to uncover and map the anchor. Where the shank of the anchor met the arm there was approximately 0.5m of heavy sand coverage but as Palm excavated along the shank it got progressively deeper, to a point more than 2m from the crown where it was approx 1.3m below grade. All the dredge could do was barely keep up with the sand cascading into the excavated pit. From what he was able to uncover Palm determined that the anchor was probably an angled-crown type of pre-1846 vintage.

On July 26th 2003, with funding from the Tofino Business Association and aid from local divers, a heavy-duty dredge, scow, crane and lift barrels Palm raised the anchor, with a view to conserving it and putting it on public display in the Village of Tofino. Prior to the lift Palm observed that there was a wooden stock attached to the anchor's shank. The stock consisted of 2 X 3.69m long timbers "sandwiching" the shank. The timbers were held in place by 4 steel bands and 8 X 3.1cm diameter wooden treenails. All that remained of the iron bands were iron oxide/sand concretions. In the process of the lift the stock assembly separated. One timber remained in the excavated pit, the other (in two pieces) was retrieved.



Fig 2: The anchor immediately after retrieval. Note the heavy concretion on the remaining palm and the position of the ring in relation to the shaft. Note wooden stock in background.

The stock was noted to have rounded ends which indicate a date of manufacture after 1780. (Rounded ends were utilized after that date so as not to damage a vessel's copper-sheathed hull). The anchor, the two sections of wooden stock and the treenails were transported to the Palm residence on Strawberry Isle, off Tofino. The stock sections and treenails were placed in a tank of fresh water with a lid, the water being changed at two week intervals thereafter. Subsequent analysis of wood samples from the stock showed it to be constructed of White Oak, while the treenails consisted of Red Oak. The former species does not occur naturally on the Westcoast of the North American continent. Though waterlogged, the stock timbers were in an excellent state of preservation, with evidence of tool marks and no indication of teredo action. This suggests that the stock and anchor were buried quickly and deeply. The anchor's estimated weight on retrieval was between 550 and 600kg. The remaining palm was heavily concreted. The anchor ring was "frozen" in a position of 90 degrees in relation to the shaft (see Fig 2). This suggests that the anchor was in a stowed or "catted" position when lost and not intact being used to anchor a vessel. Researchers disagree somewhat in their descriptions of the exact type of anchor represented by this artifact and the chronological spread of the period of manufacture. The anchor has been described variously as "a British 'long shank' pattern iron anchor" with an indicated chronological spread of 1790-1830 for the date of manufacture, "the standard type for the US Navy" during a similar period and an "Angled Crown/Wooden Stock anchor" not manufactured after the year 1780.

Commencing on July 27th 2003 the anchor's iron oxide concretions were removed. Beneath the concretion on the anchor ring remnants of worming and parceling were found to be in a good state of preservation. Samples of these were collected, placed in a mesh bag and stored for future analysis in a tank of fresh water. A concretion from the anchor's bill was similarly stored. No evidence of an attached anchor line was detected on the ring, further strengthening the hypothesis that the anchor was not deployed at the time of loss.

While removing the concretion from the anchor's remaining palm it was noted to contain a large number (in excess of 130) bluish-green, glass beads. These were rinsed in fresh water and stored in a glass container. A sample of the concretion containing the beads was placed in a mesh bag and stored in a tank of fresh water. The removal of all concretions, condition of worming and parceling and retrieval of the beads from the palm of the anchor was recorded photographically.



Fig 3 – Sample of beads found embedded in the concretion on the anchor's remaining palm.

A sample of these beads, consisting of two intact and one broken half bead, were sent to Ms. Melissa Darby, MA, RPA at Lower Columbia Research & Archaeology for analysis. In addition to those three specimens a broken half bead found on the beach on Echachis Island was also included in the sample. Ms. Darby used comparative bead type collections from several historic sites in the Northwest, including Fort Vancouver and associated tower and Kanaka Village, as the basis for her research. The sample beads were analyzed for size, colour, shape, diaphaneity and manufacturing type. Ms. Darby determined that the anchor beads corresponded to bead variety W1b-stp/tl/ops/1-2, also known as Fort Vancouver variety FOVA 2002. The Echachis bead was found to be a new variety and was assigned variety name ECHACHIS 1. All four beads were described as simple monochrome beads manufactured using the wire-wound process. These beads were made one at a time by wrapping part of a molten rod of glass around a wire or mandrel.

When the molten rod was pulled away, the remaining molten glass on the wire was heated and spun until it assumed the desired shape. In general FOVA 2002 variety beads are composed of spherical, sky-blue beads that range from transparent to translucent but are mostly opaque. In the historic record they are referred to as Canton Beads No. 1st, 2nd, 3rd and 4th sizes. According to Ross this variety is the most common at early 19th Century sites in the Pacific Northwest.. The Muncell colour of the three anchor beads analyzed ranged between 5B 5/10 and 7.5 B 5/8, length 4.5mm to 6.2mm, diameter 6.2mm to 6.8mm. Ms. Darby concluded that a lip or protrusion of glass adjacent to the perforation is more commonly found in sites that pre-date 1830. The anchor beads represent the largest collection of bead 2002 found at an archaeological site in the Pacific Northwest. Ms. Darby also noted that the sample size of the anchor beads (no. =3) was too small to draw any strong conclusions as to what size range this collection falls into but that if most are found with the above-described protrusion, a stronger case could be made for the deposition of these beads to be within a pre-1830 deposit.

Please refer to "*The Clayoquot Beads: a Preliminary Analysis*" Darby, October 2003. No evidence of a container (bag, box or otherwise) was noted in the concretion associated with the beads; however a number of the beads were found to be "fused" together with their bore holes aligned. This suggests that some of the beads may have been strung together at the time of loss, perhaps in readiness for trade. During the fur trade era beads were typically traded strung "by the fathom".

Allusions have been made that "the validity of the beads as scientific samples" has been compromised due to the fact that their removal from the concretion was not "monitored or documented" and that any analysis must be based "on a good faith assumption that they did come from the anchor's concretion". In actual fact the presence of the beads within the concretion, while still attached to the anchor's palm, was recorded photographically and that data will be included in our final report.

Further allusions have been made to the unsubstantiated contention that the vessel *Tonquin* could not be associated with this find as it did not carry beads amongst its cargo. In actual fact there are a number of references to beads being used in trade on that vessel's last, fateful voyage including:

".....As we were opposite the bay of Karaka-koua, the natives came out again, in great numbers, bringing us cabbages, yams, taro...&c...The next day the islanders visited the vessel in great numbers all day long, bringing, as on the day before fruits, vegetables and some pigs, in exchange for which we gave them **glass beads**, iron rings, needles, cotton cloth, &c..." Franchere, 1820.

"...The day following commenced the trade. The natives about the Ship & on board of her were very numerous, had plenty of Skins, but would not trade them at the rate Capt. Thorn wished. He offered them 2 Blankets of Cloth, or Lion Skin, a quantity of **Beads**, hooks and Vermillion for each skin, and they would think of taking nothing less than 5 skins..." From the eyewitness account of the *Tonquin's* interpreter/pilot Joseachal, as told to Duncan McDougall, Fort Astoria, June 1813.

Beads of the type associated with the anchor are generally very stable and require little or no conservation treatment, however, on the suggestion of Dr. Steven Acheson a small amount of fresh water was added to the bead's glass container in September of 2003. Jim Jobling of Texas A&M University's Conservation Research Lab has suggested further treatment consisting of a series of fresh water rinses, alcohol dehydration baths and sealing using a clear acrylic spray (Krylon#1301).

B. Conservation

Immediately after the concretions had been removed from the anchor and for a period of two weeks thereafter the anchor was repeatedly rotated and rinsed with fresh water, by means of a high pressure nozzle, until no salt residue was evident during the drying intervals. On August 3rd 2003 one side of the anchor was wire-wheeled and coated with a refined bituminous asphalt product that is neutral in its effect on metal. On August 10th the anchor was rotated and the above process was repeated on the untreated side. Between August 11th & 18th each side of the anchor was wire-brushed by hand and a second coat of the above-described product applied. (Please refer to "*Clayoquot Anchor Post Recovery Treatment Report*", Palm, September 2003).



Fig 4 – The anchor after removal of concretions, cleaning & coating

In his letter dated September 29th 2003 to Steve Bernard of the Tofino Business Association Dr. Steven Acheson, D.Phil., Heritage Resource Specialist, Archaeological Planning & Assessment indicated the following, "...I will require the removal of the black viscous coating and immersing the anchor in a 2% solution of sodium hydroxide to counteract the chloride ions embedded in the iron..." Over the following two week period Mr. Palm experimented with various methods of removing the coating under the following test conditions: The threaded ends of three rusted iron bolts were dipped into the product used to coat the anchor and allowed to dry for five days. Various methods of removing the coating were tried with varying results; a mineral spirit-based solvent and bristle brush, the application of heat and the use of a wire wheel. The latter method achieved the best results in the fastest time and did not appear to abrade or otherwise affect the threads of the bolt.

On October 18th 2003 Mr. Palm contacted Mr. Jim Jobling of the Conservation Research Laboratory, Department of Nautical Archaeology at Texas A&M University to inform him of his efforts at removing the coating, to seek advice on the cleaning of the anchor and to solicit his input on the long-term, conservation procedures and equipment required to stabilize the anchor. Mr. Jobling referred Mr. Palm to the Conservation Research Lab's conservation manual "Methods of Conserving Archaeological Materials from Underwater Sites" by Donny L. Hamilton, with particular reference to File 9 "Metal Conservation: Preliminary Steps", File 10A "Iron Conservation Part I: Introduction and Equipment" and File 10B "Iron Conservation Part II: Experimental Variables and Final Steps". Since this initial contact Mr. Jobling has freely and generously given his professional advice and guidance in the conservation of the anchor. With funding from the Tofino Business Association and the Heritage Conservation Branch, donation of space from the District of Tofino and donation of labour and materials from the Tonquin Foundation a small conservation facility was constructed at the Tofino Public Works Yard dedicated to the conservation of the anchor and associated materials. This facility consists of a small building containing a steel tank for the anchor, fiberglass storage tank for the stock, concretions, worming and parceling, a work bench, power source and testing and monitoring equipment.

In December of 2003 the steel tank was filled with a 2% solution of sodium hydroxide and the anchor was transported from Strawberry Isle and placed in it. On obtaining the required equipment the anchor was connected to an electrolytic cell (maximum output 50 Amps/5-15 volts). The tank is a "T" shaped vat, so that the vat itself acts as an anode. The pH of the solution is monitored at weekly intervals and kept high enough to prevent anodic dissolution. Similarly, the chloride level is checked weekly. The first of these tests were undertaken on March 9th 2004 by Mr. Palm who continues to monitor the levels (see attached test records). When the chlorides in solution reach a point where their increase levels off, the electrolyte will be changed. It is estimated that 5 changes of electrolyte will be required to stabilize the anchor. The anchor will then be soaked in distilled water, with the water being changed once a week for ten weeks. After that the anchor will be coated in tannic acid and the metal sealed with successive coatings of polyurethane sealant.

In January of 2004 the anchor stock, concretions and worming and parceling were transported from Strawberry Isle and placed in a tank of fresh water in the conservation facility.

Costs of retrieval, analysis and conservation of the anchor and associated materials to date:

Exploratory excavation of anchor:	\$ 321.00 (Tofino Business Association -TBA)
Retrieval of anchor:	\$1669.20 (TBA)
Initial treatment & coating removal:	\$2500.00 (TBA)
Partial conservation costs:	\$2000.00 (B.C. Archaeology Branch)
Construction materials, freight, NaOH:	\$ 810.00 (Method Marine Ltd.)
Electro-plating Unit:	\$ 700.00 (TBA)
Shed construction labour (donated):	\$ 300.00 (Tonquin Foundation)
Monitoring labour (donated)	\$ 900.00 (Rod Palm)
Fiberglass tank - stock, etc. (donated)	\$ 200.00 (Ken Gibson)
Bead Analysis (donated)	\$ 400.00 (Lower Columbia Research)
Conservation consultancy (donated)	\$1500.00 (Jim Jobling)
Site preparation, security, labour:	\$2000.00 (District of Tofino)



Fig 5: Anchor conservation tank at Tofino Public Works Yard

C. Historical/Ethnographical Background

Much has been made of the size of the anchor being an indication of the size of the vessel that deployed it and of basic formulae established in the 18th century recommending anchors of a certain size for vessels of a certain tonnage. “Recommend” is the operative word here; these were “recommendations”, not hard and fast rules.

On retrieval the anchor’s weight was estimated at between 550 and 600kg. A later calculation undertaken by Jacques Marc of the Underwater Archaeological Society of B.C. further refines this estimate to 570kg (1254lbs). From this calculation it has been postulated that the vessel which deployed this anchor would have been approximately of 225 tons burden (the *Tonquin* measured some 269 tons).

It should be noted that both of these calculations are for the anchor post-recovery. Neither calculation is for the anchor in its original condition nor takes into account material loss to the artifact due to oxidation, or the fact that one of the palms is completely absent.

The postulation that the recovered anchor originated from a vessel of approximately 225 tons burden is based on the contention that the anchor in question was one of the vessels’ main or bower anchors. Though this may indeed be the case there is the very real possibility that this particular anchor was one of the vessels’ kedge anchors (i.e. the small anchor used to keep a vessel clear from the bower anchor when in moving water such as a river). If the tidal/current conditions in Templar Channel did not require the use of the kedge it would have been in a stored configuration.

Furthermore, it should be noted that during the period in question (late 18th/early 19th century) anchors were critical accessories to success; indeed they could spell life or death in extended voyages of discovery and trade. No ship could afford to lose them, but losses were inevitable. In order to counteract this potentially disastrous possibility it was common practice during that period for ships to carry many “spares”, e.g. only 20 years previous to the *Tonquin*’s voyage details of the *Columbia*’s outfitting (a vessel substantially smaller than the *Tonquin*) lists a total of 6 anchors carried aboard (*Voyages of the Columbia*, p.449, F.W. Howay).

The literature contains a number of references indicating that the *Tonquin* was either under weigh (with anchor(s) raised) or preparing to be so when lost. These include:

“...and urged the Captain and Officers to put to sea, whereupon Thorn finally ordered the anchor to be raised and the sails set...” Franchere, 1820.

“...The manner in which the ship was blown up he explained fully. They were at the commencement of the difficulty getting under weigh and many of the Sailors aloft” and “...He continued on deck wholly unarmed, giving orders for getting under weigh, without taking the precaution of making the natives leave the Ship during the confusion of preparing for sea...” From the eyewitness account of the *Tonquin*’s interpreter/pilot Joseachal as told to Duncan McDougall, Fort Astoria, June 1813.

For obvious reasons no prudent master, with the experience and seamanship of Lt. Thorn, would have anchored his vessel in mid-channel (where the anchor was located) but would have come to anchor closer in to the island and village site of Echachis. The location of the anchor suggests that by one means or another, the vessel from which it came had already departed her anchorage at the time of loss.

Tla-o-qui-aht First Nation oral history indicates that the *Tonquin* was under tow by a number of canoes when lost. Due to prevailing westerly winds the *Tonquin* was being towed from

Echachis, across Templar Channel to Tin-Wis when she sank in mid-channel; the location of the anchor find.

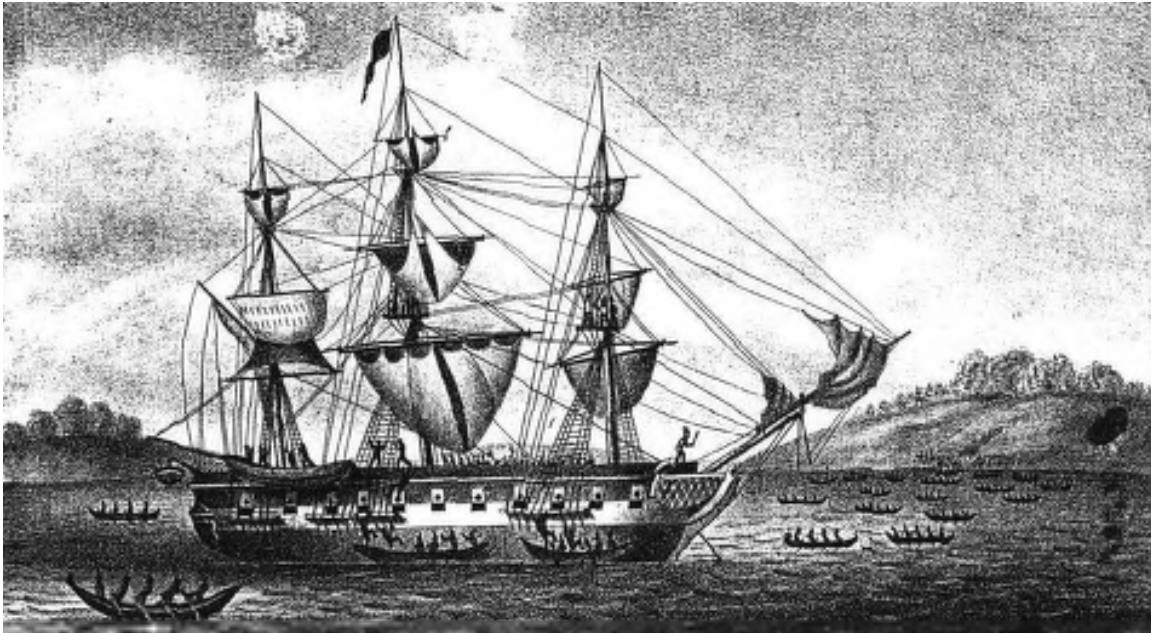


Fig 6: Edmund Fanning's sketch of the ship *Tonquin* at anchor in Clayoquot Sound

The *Tonquin* was built at New York in 1807 at the yard of Adam and Noah Brown. The vessel's registered tonnage was 269 32/95 tons, the length was 28.92m, breadth 7.84m and depth of hold 3.92m. She was ship-rigged (i.e. square rigged on all three masts), had two decks, a square stern, with the bows were adorned with a "man-bust" figurehead. The ship was pierced for twenty-two guns, however she never carried more than ten. On her final voyage at least eight of the gun-port doors were painted to resemble guns in place. This practice was common during the period in question, so as to allow greater cargo capacity. Investigations have revealed that all the *Tonquin*'s mounted guns would have been constructed of iron.

On her shake-down trading voyage to China in 1808 her original owner, Edmund Fanning, found her to be "*fast, sound, able and equal to any sloop of war of the navy*". In 1810 she was purchased by New York millionaire John Jacob Astor and fitted out for a voyage to the northwest coast via the Falklands, Hawaii and the Columbia River. On June 5th 1811 the *Tonquin* departed the newly established fort, at what is now Astoria, Oregon and embarked on what was intended to be a fur-trading voyage along the coasts of British Columbia and Alaska. Soon after departing Fort Astoria the *Tonquin* picked up a Quinault First Nation interpreter/pilot at Destruction Island (on the modern-day coast of Washington State, near the mouth of the Hoh River). This man's name was Joseachal and besides having made several earlier voyages to the Westcoast of Vancouver Island he was related by marriage to the Tla-o-qui-aht First Nation.

Early in June of 1811 the *Tonquin* came to anchor off the Tla-o-qui-aht First Nation village of Echachis to trade for furs. During the course of this trade and due to a violent interaction between the vessel's crew and warriors of the Tla-o-qui-aht First Nation the vessel was lost, with a great loss of life.

The only eyewitnesses of the event to survive were the Quinault First Nation interpreter/pilot Joseachal and those members of the Tla-o-qui-aht First Nation not killed in the incident, or its' aftermath.

In the Fort Astoria post log entry for June 15th 1813 (two years after the *Tonquin* was lost) Pacific Fur Company partner Duncan McDougall notes the visit to the Fort of Chinook Chieftain Concomly and his entourage, which included Joseachal.

Over the course of three days Joseachal was interviewed at length concerning the circumstances surrounding the loss of the *Tonquin*.

Joseachal's account not only places the location of the incident within Clayoquot Sound but identifies individuals of the Tla-o-qui-aht First Nation with hereditary links to modern-day family/clan groups and individuals of that aboriginal community.

Joseachal had made at least two previous voyages to the Westcoast of Vancouver Island: with Captain William Brown, aboard the *Butternorth* in 1792 and with Captain John Ebbets, aboard the *Alert* in 1802. He was familiar with a number of First Nations languages and dialects, had a "smattering of English", was well versed in trading practices and had a sister who was married to a member of the Tla-o-qui-aht First Nation.

Captain Thorn of the *Tonquin* took him aboard from a fishing canoe at or near Destruction Island with the promise that he would be "*well-rewarded for his services, & returned at that place or in this river (Columbia) on the arrival of the Ship in the fall*".

The *Tonquin* proceeded up the coast "*to Wicanninishes (the territory of Chief Wickaninnish, i.e. Clayoquot Sound), where they came to anchor toward evening for the purpose of trading Sea Otters*".



Fig 7: Detail of Francisco de Eliza's 1791 chart showing Templar Channel and the Tla-o-qui-aht village sites of Echachis and Clayoquot (shown as black squares).

According to Joseachal trade did not commence until the following day, when a large delegation of Tla-o-qui-aht came aboard with "*plenty of Skins*". Joseachal identified that "*the Chiefs of the Villages ashore were **Wicanninish** & his two sons (the younger whose name was **Shee-***

wish), *Nook-a-mis* & *Sid-da-kum*, two elderly men”. Nook-a-mis (Nuukmiis) was the principal trader and orator that day on behalf of the Tla-o-qui-aht First Nation. Nuukmiis and Captain Thorn were engaged in an often passionate debate over the price of furs until well after noon when Thorn, apparently frustrated with the lack of progress, “kicked way his (Nuukmiis) Skins, struck him with one across the face, damned his eyes & began preparing to get under weigh”.

This incident, though not the root cause of it, precipitated the attack on and ultimate loss of the ship *Tonquin*.

The name Nuukmiis is a hereditary title passed down from generation to generation of what is now the Martin family of the Tla-o-qui-aht First Nation. The most recent recipient of the name Nuukmiis is Mr. Robert Martin, who received it on March 20th 2004, at a memorial potlatch in Tofino.



Fig 8: Shown at right is Nuukmiis (Mr. Robert Martin) at a memorial potlatch in Tofino.

The destruction of the *Tonquin* and the loss of upwards of 200 of their Band members was a significant event in Tla-o-qui-aht First Nation history. So decimated was the able-bodied,

Tla-o-qui-aht male population that for a number of years after the event Tla-o-qui-aht women disguised themselves as male warriors in order to deter attack from other groups. Tla-o-qui-aht First Nation oral tradition is clear and specific with regards to the events surrounding the loss of the ship *Tonquin* and to the location of her loss as being Templar Channel. In the 193 years since the *Tonquin*'s loss a number of First Nation's accounts, in addition to Joseachal's, have been recorded including:

For July 15th 1811 (approximately a month after the *Tonquin*'s loss) an entry in the log of the brig *New Hazard* reads, "...*At six came to New-Etta* (Shushiarte Bay, at the north end of Vancouver Island). *The Indians told us there was a ship taken at Nootka...*"

For July 25th 1811 an entry in the log of the *Hamilton* reads, "...*Came to in Newitney* (Shushiarte Bay) *in 10 fathoms water... Heard a flying report of a ship being captured down to the southward by the natives but sum of her men blew her up with her own powder...*"

For July 29th 1811, while anchored in Nasperti Inlet, the log of the *Hamilton* reads, "...*the natives came off & it seems for to be true that there is a ship taken at the wickaninnishes & the people blew her up when they found that they could not save her.....The natives tell us she had three masts so we suppose it to be the Tonquin of New York...*"

For August 31st 1811, again anchored at Shushiarte, the *New Hazard*'s log reads, "*The ship proved to be the Tonquin, Captain Thorn....the captain and another one ran and set fire to the magazine which blew the stern out and she went down stern first. About 100 Indians were blown up and sunk...The place where this melancholy event took place was Wichanenashees*".

The August 3rd 1825 entry in the journal of ship's surgeon Dr. John Scouler of the Hudson's Bay Company's ship *William and Anne* reads, "*Since visiting Nootka we have all been curious to visit the village and see what vestiges of the English and Spanish settlements remained. Although we received a very kind invitation from Moaquilla (Chief Maquinna) to pay him a visit, the fate of the Tonquin which was cut off a few miles to the south, had filled the minds of some on board with fearful apprehensions. Concerning the fate of the Tonquin, the Indians were very reserved; perhaps they had little to communicate. The old chief told us that the massacre had taken place at Cloquatx (Clayoquot) and the scheme had been concocted by a turbulent Indian named Quashahyshee....*"

In the 1860's Ten-ta-coose, a former slave of the Tla-o-qui-aht told Jason Allard of Fort Langley that he had been at Clayoquot when he had seen a large ship attacked and blown up. "*Ten-ta-coose, the slave...saw the tall masts break and crumble...bodies thrown into the air to fall broken into the water, and wood, and iron and tattered fragments of sail-cloth and humanity he saw blasted high into the sky....*"

In approximately 1876, a Hesquiat chief by the name of Teets-ka became a friend of Father A.J. Brabant, the Roman Catholic priest and missionary based at Hesquiat. Teets-ka had also been a slave of the Tla-o-qui-aht at the time of the *Tonquin*'s loss. Brabant wrote Teets-ka's account in a letter to John Devereux in 1896. A portion of that account reads, "*The ship was anchored just inside the eastern channel close to a small island called by the Indians Ei-tsa-pe (Tonquin Island), about half a mile to the east of Echachis Point and village*". Teets-ka had been in a canoe alongside the ship when it blew up. The shock of the explosion capsized the canoe and the next thing Teets-ka knew was that he "*was feeling the sand at the bottom of the sea*".

On April 14th 1968 Tofino historian Ken Gibson conducted an interview with Mrs. George Dan Simon, a Tla-o-qui-aht elder, then 78 years of age. In the course of this interview Mrs. Simon indicated that the *Tonquin* had been anchored off Echachis Island when attacked. After the ship had been overcome the Tla-o-qui-aht, in numerous canoes, attempted to tow the vessel across the channel to "Dinawis" (Tin-Wis) Beach. Before reaching the beach the *Tonquin* blew up and sank.

Even more recently (2003/2004) Tla-o-qui-aht First Nation canoe-carver, traditional storyteller and wilderness guide Nupit-Tuch-Chilth (Mr. Joe Martin) has confirmed it is his people's oral tradition that the *Tonquin* was attacked off Echachis and lost while under tow.

D. Rationale for Further Investigations

- An anchor positively identified as being manufactured before or during the fur trade era is located, buried deeply in the seafloor of Templar Channel.
- The anchor shows clear indications that it was stowed aboard a vessel at the time of loss.
 1. The anchor's ring is "frozen" at a 90° angle to the shaft.
 2. Though the textile parceling and worming on the anchor ring are found to be in a good state of preservation there is no evidence whatsoever of an attached anchor line.
- The anchor's well-preserved wooden stock is constructed of White Oak, a species not native to the west coast of the North American continent.
- When the concretion is removed from the remaining palm it is found to contain the largest collection of FOVA 2002-type trade beads ever located at an archaeological site on the Northwest Coast of the Americas.
 1. Preliminary analysis of a sample of the beads suggests that they are of pre-1830 manufacture.
 2. A number of the beads are found to be fused "bore hole to bore hole", indicating that at the time of loss they were strung in readiness for trade.
- Only one fur trade-era ship is known to have been lost in the vicinity of Templar Channel.
- The location of the anchor corresponds exactly to where Tla-o-qui-aht First Nation oral tradition places the final resting place of the ship *Tonquin*.
- The location of the anchor corresponds generally to where most historical accounts place the final resting place of the ship *Tonquin*.
- Preliminary indications are that the anchor is associated with a vessel of the fur trade era and that a great likelihood exists that other well-preserved materials associated with that vessel lie buried in the area of the anchor find.

E. Investigations to Date

Sub-Bottom Profile Survey: On January 4th 2004 members and supporters of the Tonquin Foundation, with equipment and services provided by Imagenex Technology Corporation, Browning Pass Charters, Method Marine Ltd. and others undertook a preliminary sub-bottom profile survey in the immediate area of the anchor find.

The sub-bottom profile unit utilized was an Imagenex DF-1030 Sub-Bottom Profiler.

The DF-1030 is a high resolution underwater unit that uses ΔF technology incorporating CTFM (Continuous Transmission Frequency Modulation). The unit includes a standard RS-485 serial interface, high performance, low frequency transducer and an ultra-low noise receiver circuit.

Hardware Specifications:

Frequency:	CTFM 10 – 30 kHz
Transducer:	Independent receive/transmit
Transducer Beam Width:	20° Nominal Conical Beam
Display Resolution:	10mm – 100mm (5m – 50m range scales)

Min. Detectable Range: 500mm
Interface: RS-485 @ 115.2 kbps
Connector: Wet mateable, Impulse BH-4-MP-SS
Software Specifications:
Windows™ Operating System: Windows™ 95, 98, Me, XL
Range Scales: 5m, 10m, 20m, 30m, 40m, 50m
GPS Input (4800, N, 8, 1)
NMEA 0183 Format: GLL
File Format: (filename) .81e

The unit operator/technician on this occasion was Mr. Willy Williamson, President and CEO of Imagenex Technology Corporation and co-designer of the DF-1030 Sub-Bottom Profiler.

The survey platform consisted of the 11m Canoe Cove mv *Browning Pass*, operated by owner and Master Mr. Mike White. A support vessel/tender was supplied by Mr. Joe Martin.



Fig 9: mv *Browning Pass* undertaking sub-bottom profiler survey, 04/01/04

Additional support crew consisted of Mr. Carl Martin, Mr. Rod Palm and Mr. Steve Bernard. Weather conditions were overcast with periods of light snow. Sea conditions consisted of a low 1m swell. Four surface buoys were deployed to mark the corners of a 0.5 x 0.5 mile rectangle enclosing the site of the anchor find. A hand-held GPS unit was utilized to align and record a total of 11 transects over the survey area.

The sea conditions (low 1m swell) caused the image on the data screen to have a “jagged edge” to the untrained eye, however Mr. Williamson was confident that he could interpret the data satisfactorily. Mr. Williamson noted that the substrate in the survey area was very

hard and dense; conditions that could easily shield “soft” materials such as waterlogged wood from detection and that it was likely that the transducer would have to pass directly over denser objects (ferrous materials, etc.) in order to detect them.

SBP January 04, '04

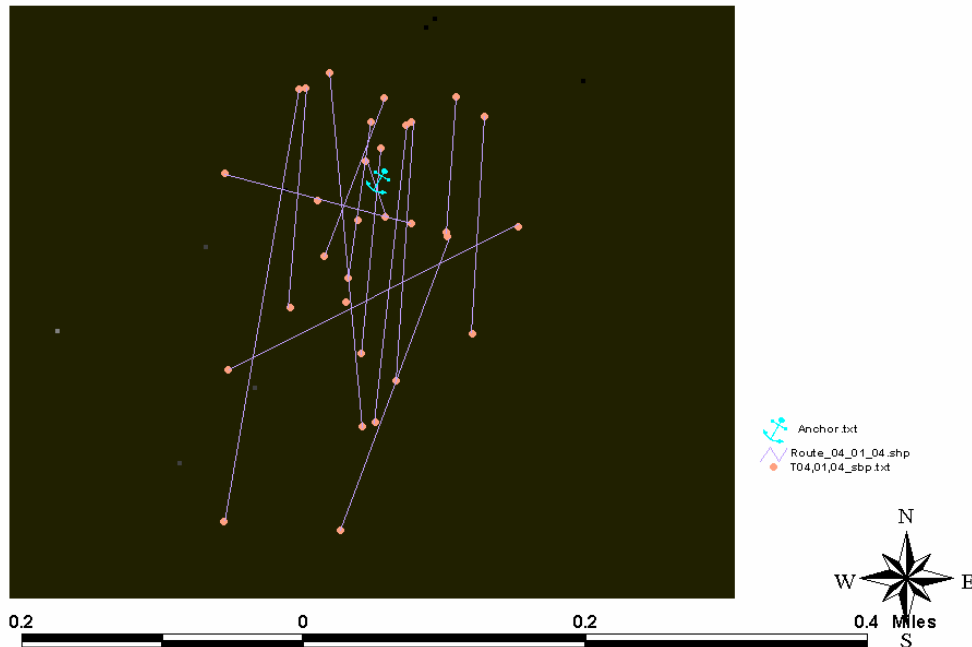


Fig 10: Record of transects for Sub-Bottom Profile Survey, 04/01/04

Although the results of this preliminary sub-bottom profile survey were inconclusive, after spending many hours reviewing the digital record of the transects Mr. Williamson believes there may well be a number of as yet unidentified targets off the SW marker and that further, more intensive survey of the area is definitely warranted.

Mr. Williamson believes that by lowering the operating frequency of the DF-1030 better bottom penetration will be achieved. Further sub-bottom profile survey, with the DF-1030 operating on this lower frequency, will be incorporated in future survey operations.

Visual Site Survey: On February 29th 2004 Tonquin Foundation director Mr. Rod Palm and volunteer diver Mr. Alan Peacock undertook a preliminary visual site survey of the seafloor, in the area of the anchor find. Surface support/tenders consisted of Mr. Steve Bernard and Mr. Joe Martin. The dive support boat was donated by Shark Salvage Ltd. and the diver's air was donated by Method Marine Ltd. The methodology was as follows:

- An anchor was set within 10m of the location where the anchor was originally located.
- A search pattern reel was attached to the mooring line of the set anchor.
- Five concentric circles were swum with two divers spaced 3m apart. Each diver could easily see 1.5m on either side.
- The circles were increased in size to 6m, with visual coverage being at least 6m.

- The radius of the last circle was 30m, with visual coverage to approx 32m. No cultural material was sighted. Even though the conditions were calm the seafloor was in movement, restricting focusable visibility to approx 2m.

Eco Nova Productions Survey: Between May 16th and May 22nd 2004 Eco Nova Productions Ltd. of Halifax, Nova Scotia undertook a remote-sensing survey of a portion of Templar Channel, Clayoquot Sound.

In a letter dated May 7th 2004 from Eco-Nova President John Davis to Tonquin Foundation Vice-President Steve Bernard Mr. Davis stated, *“We have been working with Mike Muirhead of Western Subsea and the University of Victoria and have made arrangements to use their research vessel with Mike’s highly advanced technical equipment to conduct a search for the wreck of the **Tonquin**”*.

These search operations were based aboard the University of Victoria’s research vessel *John Strickland*. The suite of remote sensing equipment included an Imagenex 838 (330 kHz) sidescan sonar,



Fig. 11 *srv John Strickland*

an Imagenex Model DF 1030 sub-bottom profiler, an Imagenex Model 855 rotary scan sonar, a RoxAnn (50 kHz) bottom classification system and an unspecified model of magnetometer.

It should be noted here that the sub-bottom profiler was the same model used by the Tonquin Foundation on January 4th 2004. The sub-bottom profiler was not used in the course of the Eco-Nova survey. Neither the sidescan nor the rotary sonar units located any significant anomalies in the search area.

The magnetometer did detect three (3) significant targets (in excess of 100 gammas) within 100 metres of the location from where Mr. Palm raised the anchor.

A detailed report on the results of the Eco-Nova survey is expected to be released in mid-June of 2004 and shared with the Tonquin Foundation.

Investigations at the locations of the magnetometer targets will be incorporated into any future field work undertaken by the Tonquin Foundation.

F. Discussion

It is felt that at this time that all available “non-intrusive” (i.e. sub-bottom profiler, magnetometer, visual searches, rotary & sidescan sonar) methods of investigation have been exhausted at the Templar Channel site(s).

There is one non-intrusive methodology that has not been applied to this project but its’ availability and the costs involved make it a prohibitive option at this time.

Underwater Ground Penetrating Radar (UGPR) is the survey system in question.

In February of 2004 a representative of the Tonquin Foundation contacted Dr. Robert Prescott, a nautical archaeologist at the University of St. Andrews in Scotland.

Dr. Prescott believes he has located the wreck of *HMS Beagle* (of Charles Darwin fame) deeply buried in the sediments of a Scottish river estuary.

The method used to locate and remotely survey this shipwreck was an underwater system of UGPR developed and patented by the British firm Radar World Ltd.

Radar World's Managing Director, Mr. Gordon Stove, informed the Tonquin Foundation that his company had much experience with UGPR working in subsea, marine, littoral and coastal marshland environments and that it would work well at the Templar Channel site.

The daily rate for the survey crew and UGPR equipment is currently £3000.00.

On land it is possible to scan up to 200m sq in one day. At sea the preferred travel speed is 5 knots, with the amount of line coverage dependant on the number of daylight hours and sea conditions.

Data is processed off-site, at Radar World's facilities in the United Kingdom at a rate of £900.00 per day. The general rule of thumb is that for every full day spent in the field collecting data a further three days are required to process the data into images and compile a report.

Travel, shipping and subsistence costs (from and to the UK) would also have to be borne by the Tonquin Foundation.

Although this survey system may well be reconsidered in the future it is not a viable option at this time.

With the available remote-sensing systems exhausted more intrusive measures must be considered. They are:

Excavation of 2m diameter reinforced pits. This would be a complicated exercise requiring significant manpower and equipment, not just for the excavation itself but also for the capture and management of the tailings. In addition, while there is an indication where to excavate, there is no definitive location(s).

Vibracoring is a sampling methodology for retrieving continuous, undisturbed cores.

The principal behind a vibracore is the development of high frequency, low amplitude

vibration that is transferred through the vibracore head down through the attached barrel or core tube. This vibrational energy liquefies sediment enabling the core barrel attached to the vibracore unit to penetrate into the liquefied sediments.

A core catcher is attached to the end of the barrel which holds the sediment inside the barrel when withdrawn from the sediments. A variety of vibracore units are available. Some are small, lightweight and portable; others are large, heavy units that can only be deployed from large vessels.

The literature indicates that vibracoring has been utilized in a number of marine archaeological settings. Of particular interest, because of the parallels and similarities to this proposed project, is the Institute of Nautical Archaeology/Jamaica National Heritage Trust/Texas A&M University's 1991 Season of the Columbus



Caravels Archaeological Project in St. Ann's Bay, Jamaica.

Fig 12. Vibracore samples – St. Ann's Bay.

During the 1991 season archaeologists and field students surveyed the area of St. Ann's Bay in search of the remains of Christopher Columbus's last command: the caravels *Capitana* and *Santiago*. Due to unseaworthiness these vessels had been grounded purposefully in 1503. The 1991 season consisted of three phases: a remote sensing survey utilizing a sub-bottom profiler, followed by vibracoring and test excavations of significant anomalies.

The most promising sites were tested by using a vibracore machine to take 3-inch diameter core samples (a total of 136 vibracore samples were taken over the 11 week season).

The coring allowed the researchers to differentiate materials such as gravel, ballast stone and wood. Of the 21 sites found, vibracoring indicated that 14 were associated with wood. Four were confirmed as shipwrecks when cores taken from them proved to contain fragments of ship's wood such as frames, ceiling planking and hull planking. Small artifacts, including ceramic shards and a small brass buckle, also appeared in the cores.

After coring, test excavations were conducted on the four sites, which were buried beneath as much as 3.5m of sediment. (*"The Search for Columbus's Last Ships: The 1991 Field Season"*, by J. Parrent, J. Neville & R. Neyland, *INA Newsletter 18.4 (1991): 16-1*).

Vibracoring requires even more back-up equipment than excavation and can be a very brutal operation, in that the sampler head blindly drives a 3 – 4 inch hole through anything it encounters, including any and all cultural material.

In early June of 2004 V. Elliott Smith PhD, President of the Michigan-based AScI Corporation and a noted expert on vibracoring technology was contacted by the Tonquin Foundation. While giving of his advice most generously he aired strong doubts as to whether vibracoring would be at all effective, given the nature of the substrate in the area of the Templar Channel site (i.e. hard-packed sand).

Another concern raised with the use of vibracoring technology at the Templar Channel site is the effect that the ocean swell and tidal currents will have on a surface deployed unit i.e. keeping the core tube in a vertical orientation.

Large, surface-deployed vibracore units utilize heavy "A"-frames, multi-point anchoring systems, spud-barges, etc to ensure that the core is driven perpendicular to the bottom. One possible alternative is a submersible vibracore system.

In June of 2004 the Tonquin Foundation contacted Mr. Brian Menounous, an assistant professor of geography at the University of Northern British Columbia in Prince George with extensive experience of vibracore technology in geoscientific applications. In February of 2004 Mr. Menounous received a grant of \$36,188.00 from the National Environmental Research Council to construct a submersible vibracore unit which may well be completed by late July of 2004. Mr. Menounous has expressed an interest in utilizing this equipment at the Templar Channel site, yet also aired concerns regarding whether or not it would be effective given the area's substrate.

The Tonquin Foundation, although keeping the vibracore option open is deeply concerned about the destructive effect that it could possibly have on any cultural material that it might encounter.

G. Intent

With this in mind a less intrusive methodology than either excavation or vibracoring is recommended and intended by the Tonquin Foundation at this time.

The intent is to core-probe the sites of the anchor recovery and the magnetometer anomalies in a controlled pattern so as to delineate the periphery or absence thereof of any large object(s) (e.g. ship's hull features, etc) that may be present in the substrate.

H. Methodology

The centre of the pattern will be the site from which the anchor was recovered by the Tofino Business Association in July 2003 and selected magnetometer anomalies located by Western Subsea in May 2004. Heavy anchors will be set at these points that will be left on the sites as datum points for these and any future works. There will be no surface float marking the position of these anchors. A 4 metre sub-tidal buoyant line will be left attached for relocating.

The pattern (see **Fig 13**) will be laid out with marked lines that are attached to the datum point. A compass will be laid on the line to establish the angles. Basic compass rose points will be used for less complicated facilitation. These lines will be anchored at their outer ends with driven steel pipe pins and should be left in place as future reference points.

The core-probes will be 10' sections of 1" ID steel pipe. The pipe is initially set in the sand by hand vibrating, then a 25lb iron weight with a 2ft guide shaft is inserted in the pipe then hand lifted and dropped driving the core-probe into the sand. When the core-probe meets a resistance, the penetration will be measured and recorded. Before extraction, the core-probes will be capped for shore based evaluation of their contents. Contents will be washed in a 2mm mesh sifter then examined for any cultural material. This is to be done while still wet, within 2 hours of recovery. Any found cultural material will be placed, with water, in double Ziploc bags with an appropriate label identifying its location on the site plan. All found cultural material will be delivered to one of the listed facilities (see Section I.1.c. Conservation) as deemed appropriate by the Archeology Branch. With Kevin Robinson as archaeological supervisor and advisor, this phase of the project will be directed by Rod Palm who is the Principal Investigator for Strawberry Isle Research Society and who has had 5 years (1997-2002) of analyzing monthly benthic core samples from Gray Whale feeding grounds. This represents close to 800 core-probes that were not only examined for organisms but also the debris was identified and quantified.

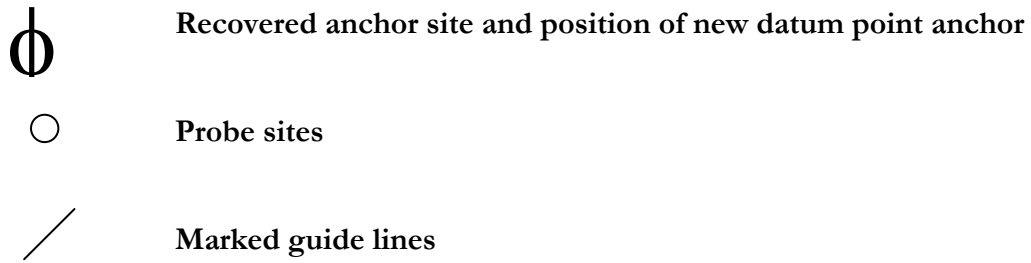
This underwater core-probe has been used at the Tofino outfall site to monitor sand level fluctuation. The core-probes were set 15ft into the sand. The site was similar substrate, less than 1 mile from the Templar Channel site. The core-probes will be tagged in order that their penetration and contents may be recorded and layered as a shape file onto a GIS ortho image of the physical site. Evaluation of this file will dictate in which direction we should extend the rayed search pattern for further probes.

- If the core-probes indicate a buried anomaly, then they should be extended until no resistance is encountered.
- If resistance is found to extend beyond a radius of 40m then it is likely safe to assume that we are striking hardpan.
- If no resistance or cultural material is found in any of the 12 probes within 10ft of penetration then I feel this strategy should be abandoned.

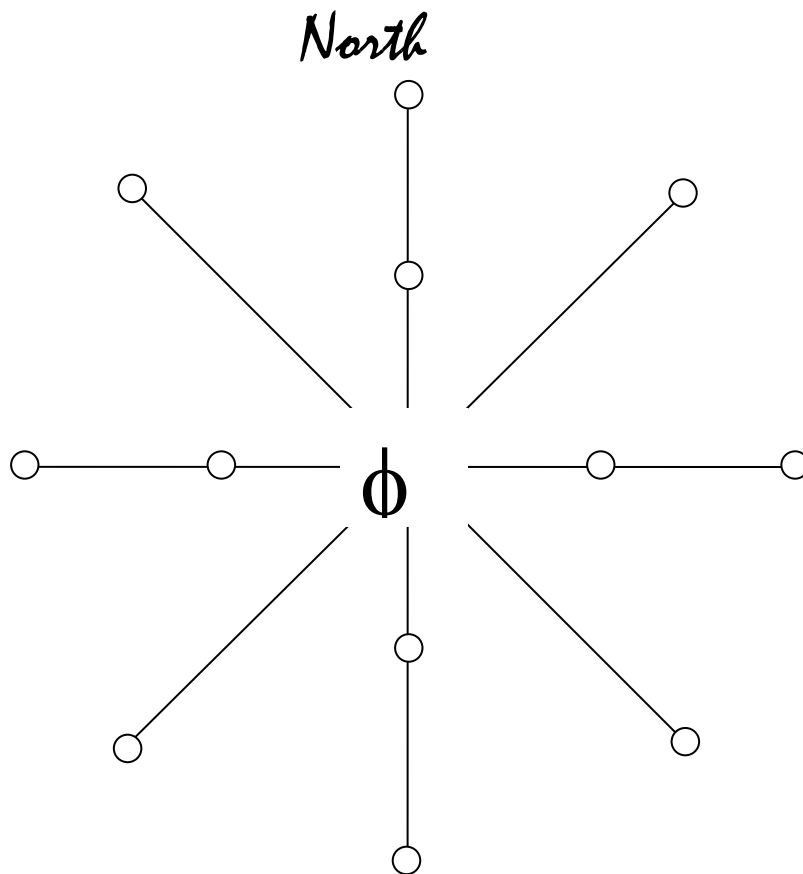
It is felt that the proposed core-probing procedure would have only minor impact and, if successful, would give us more intelligence towards where a pit would best be located for excavation.

Note that this shallow site is a swell swept live substrate lacking resident infauna or algae growth. This is a habitat of foragers, primarily crabs and fishes. This plan will be circulated to the Tla-O-Qui-Aht Band, Nuu-Chah-Nulth West Coast Vancouver Island Aquatic Management Society, the District of Tofino, The Clayoquot UNESCO Biosphere Reserve, Departments of Environment, Coast Guard and Lands and Waters for their consideration.

Fig 13: Proposed probe pattern on Templar Channel Site



Scale:
Diameter of pattern is 20m



H. Further Works

If the core-probing project produces evidence, cultural material or an anomaly profile, then it is felt that the next step would be to do a site specific test excavation to confirm the presence or absence of a shipwreck. This project would be covered in detail as a separate application.

I. Business Plan

The purpose of this section is to provide an overview of Tonquin Foundation financial and administrative planning for the proposed field activity to be conducted in late July. Special attention will be given as to why the current business model makes economic sense in light of compliance with the Heritage Conservation Act.

1. A COMMUNITY ARCHAEOLOGY PROJECT

It is understood that modern day marine archaeology is not an inexpensive undertaking. Permitted activity must also include reporting and allowances for expected and unexpected conservation costs. To make sense of things, it is useful to aggregate costs into several main cost centers, each associated with an activity. For the purposes of active research, Tonquin Foundation separates costs into three main components: field costs, reporting, and conservation. The spreadsheet on the following pages provides additional detail to the textual information described here.

The central theme surrounding this community project is that cash expenditures (always in a high demand on any project of this nature) be steered toward those areas which allow a volunteer organization the ability to produce professional results, and to comply with the reporting and conservation elements of the Heritage Conservation Act. The participation of outside parties with a stated interest in this project is welcomed and encouraged. Any outside party such as USABC who wishes to participate can expect that Tonquin Foundation will in good faith, seek to reduce their costs of participation as well by seeking free or discounted room nights, moorage costs, dive air fills, and meals.

a. Field Costs

Field costs such as travel costs to the community, accommodations, boat costs, equipment rental, initial data collection etc, divers, misc. hardware costs, support staff etc. The unique aspect of this proposal is such that it employs local volunteers and Tonquin Foundation members, local equipment and accommodations. For comparative purposes dollar values have been attached to donated equipment, personnel, and services that would otherwise be paid by a similar project financed from the outside. Care has been taken to use market rates.

b. Reporting

This area comprises the collection and aggregation of all data, information storage, interpolation, reporting, and distribution. It is anticipated that the interpolation and reporting of data will take time and resources. The final report submitted to the branch will be approximately 20 pages of pictures and analysis, and the package will include the relevant raw data in easily accessible electronic format such as CD-Rom, diskette, etc. It is anticipated that the report will take 20 hours for initial compilation, scientific and additional historical and cultural analysis will be provided on a volunteer basis.

Tonquin Foundation- Rod Palm/David Griffiths

20 hrs at 25.00 per hour 500.00

Printing, Photocopy, Binding (5 copies) 125.00

Final review and presentation to the Archaeology Branch will be conducted by Kevin Robinson, also a Director of the Tonquin Foundation who currently operates a successful archaeological consulting business called Archipelago Maritime Heritage.

Kevin Robinson has agreed to donate up to three days of his time currently billed out at \$400.00 per day.

c. Conservation

This area comprises the costs associated for preservation of artifacts that had to be removed from the site in order to protect them and the storage of relevant core data for subsequent analysis by outside experts. A special fund has been created comprised of a mixture of cash and business securities, in order to allow for the unlikely event that artifacts requiring conservation are required to leave the site so that they can be protected from future deterioration. Because conservation costs are an unknown, a cash reserve of 1000.00 of Society funds has been set aside with additional business security totaling 5000.00. Business Security in this case refers to a signed letter of intent from the Tofino Business Association, a reputable society comprised of local business operators whose annual revenues in the Clayoquot Sound area exceed 50,000,000 per annum. In the event that funds are required for conservation, the TBA will provide additional funds as a direct donation to the Tonquin Foundation to a maximum of 5000.00 for this project. With the assistance of the Archaeology and Registry Services Branch, the TBA and its members have funded, and will continue to fund the conservation and the Templar anchor discovery under the supervision of Rod Palm, and Jim Jobling of Texas AM University, in association with the District of Tofino. Given past actions and results, at this point, it should be well understood that the solid financial support for unanticipated conservation costs exists.

TBA Conservation Contingency fund	\$5000.00
Tonquin Foundation Cash reserve	\$1000.00
Total conservation contingency fund	\$6000.00

Jim Jobling and other staff at the Conservation Laboratory of Texas A&M University may be utilized as on-call advisors.

Staff at the Conservation Section of the Royal British Columbia Museum may be utilized as on-call advisors and have agreed to act as a repository for any material requiring conservation.

Ms. Melissa Darby MA RPA, of Lower Columbia Research & Archaeology may be utilized as an on-site or on-call advisor.

Ms. Robyn Woodward, a suitably qualified conservator with marine/perishable experience has been invited to actively participate on-site in the preliminary and subsequent analysis of samples and/or as an on-call advisor.

The following institutions have agreed to act as repositories for any cultural material recovered:

The Alberni Valley Museum
4255 Wallace Street
Port Alberni, BC, V9Y 3Y6
Contact: Ms. Cindy Van Volsem, Curator.

The Royal British Columbia Museum
675 Belleville Street
Victoria, B.C.
Contact: Ms. Pauline Rafferty, Director.

The Maritime Museum of British Columbia
28 Bastion Square
Victoria, BC, V8W 1H9.
Contact: Mr. Richard Mackenzie, Collections Department

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