

LALÅYAK

A Beginner's Guide to Sailing a Chamorro Canoe



© 2019 500 Sails. All rights reserved.

This project was made possible by support from the Northern Marianas Humanities Council, a non-profit, private corporation funded in part by the National Endowment for the Humanities.

Any views, findings, conclusions or recommendations expressed in this publication do not necessarily represent those of the National Endowment for the Humanities.

The Northern Marianas Humanities Council will have non-exclusive, nontransferable, irrevocable, royalty-free license to exercise all the exclusive rights provided by copyright.



Cover photo: Jack Doyle

Pictured left to right: Cecilio Raiukiulipiy, Ivan Ilmova, Pete Perez (close canoe); Sophia Perez, Arthur De Oro, Vickson Yalisman (far canoe)

Sail between Saipan and Tinian in Tinian Channel. Aguiquan Island in background.

Table of Contents

Preface	1
Introduction	2
Historic Context	2
Sakman Design	4
Sailing Vocabulary	5
Knots	8
Points of Sail.....	10
True Wind, Apparent Wind, and Sail Trim	11
Safety	11
Rules of the Road	14
Traditions and Protocol.....	16
Lumåyak (Sailing)	16
Using the Log Book	21
Hazards of Navigation	22
Appendices.....	23
Appendix A – 500 Sails Sailing Exam Requirements	23
Appendix B – Treating Jelly Fish Stings	24
Appendix C – Saipan Lagoon Depths	25
Appendix D – Weriyaeng Star Compass.....	26

Preface

It is said throughout Oceania that “the canoe is the people”. Canoes and canoe culture are at the heart of all Pacific Island peoples and the Chamorros are no exception. Canoes brought our ancestors to these islands. They provided transportation between the islands, access to pelagic fisheries, and enabled trade with distant islands. They brought people together as builders, sailors, fishermen, voyagers, and navigators. They shaped how people lived, what they ate, what they saw and experienced. They shaped the Chamorro world view.

When the canoes were lost, the heart was torn out of Chamorro society and a centuries long era of enslavement and suffering began. Colonial domination eroded our cultural traditions and our memories of who and what we were. Only recently are we regaining our memories, and the more we know, the more we want to know. We are awakening.

When we sail our canoes it is impossible not to think about those ancestors who invented, built and sailed these ingenious machines. When we fly across the water in their canoes, that we built with our own hands, we know their pride and happiness. We see the same water, the same waves, the same sky and stars; we feel the same wind and rain, we feel the same pull on the gigehi and the strain of the poksai. We act in unison to sail our canoes as they did, sharing happy glances and smiles, and something wells up from deep inside. It is joy. The joy of knowing who we once were and who we are becoming again.

We have built canoes and we are mastering sailing them. But canoe culture is deep and we have only scratched the surface. We no longer know the chants that start and end a voyage, or the way across the ocean to reach distant islands. Many traditions and protocols that were formed out of thousands of years of experiences on the ocean are lost to us as well. These traditions and protocols protected our ancestors. We need to regain them.

We are extremely fortunate to have a guide on our voyage of rediscovery. Master Navigator Cecilio Raiukiulipiy comes from a seafaring tradition that has continued uninterrupted from time immemorial. What we think we know, he can confirm. When we guess, he can tell us if we’re on the right track. His instruction goes far beyond sailing. Often he points out what is before our eyes that we are not aware of – things like cloud patterns, stars, marine life, currents and waves. He shares stories of his experiences on the water and explains Carolinian seafaring traditions and protocols. He is speeding us along in our journey.

I referred earlier to our canoes as “ingenious machines”. They are indeed ingenious, but they are far more than machines. They are alive. We know this when the lāyak grabs the wind, the bamboo bends, and the canoe leaps forward. It is then that we see the canoe for what it is – a living spirit that deserves our great respect and reverence. When we see them as such we take care of them, we love them, and when we entrust our lives to them they do not let us down.

The canoe is the people. Come voyage with us and see for yourself.

Peter J. Perez
Executive Director
500 Sails

Introduction

This beginner’s sailing guide was made possible by a generous grant provided by the Northern Marianas Humanities Council for 500 Sails’ *Train the Trainers* sailing project.

500 Sails’ sailing instructor, Master Navigator Cecilio Raiukiulipiy of the Carolinian island of Satawal, learned to sail at the age of seven under his uncle, “Papa” Mau Piailug. He is a Master Navigator of the Weriyaeng School of navigation. His experience spans from island-hopping in Yap to sailing on traditional voyages lasting up to 45 days, including journeys from Hawaii to the CNMI, Japan to Australia, and Guåhan to the Philippines. We are grateful and deeply honored to receive his guidance as we work together to revive the Chamorro sailing tradition after its suppression by Spanish colonists nearly 300 years ago.

The development of this beginner’s sailing guide is the result of the close collaboration with Captain Cecilio by co-authors Arthur De Oro, Emma Perez, Pete Perez, Sophia Perez, and Andrew Roberto.

The first group of trainers to sail under the instruction of Captain Cecilio included Eric David, Pheona David, Ivan Ilmova, Tatiana Ilmova, Maria Manolo, Emily Northrup, Arthur De Oro, Leo Pangelinan, Emma Perez, Pete Perez, and Sophia Perez. Their experiences and insights as students contributed greatly to the quality and value of this document as a teaching tool.

Additionally, the program would not have been possible without the administration of Emma Perez or the boat building of Pete Perez, who led the construction of *Neni* and *Richard Seman*, the two Chamorro sakman used in the Train the Trainers program.

For all involved, the revitalization of Chamorro sailing has been, and continues to be, a labor of love. It is our hope that this beginner’s sailing guide will guide aspiring sailors toward new and ancient horizons.

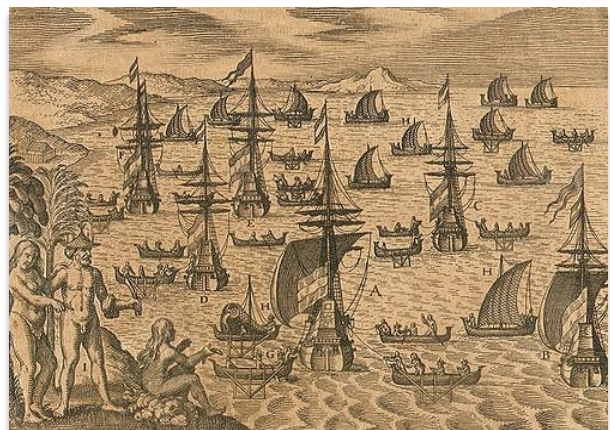
A special note on our use of the term “sakman”

Although our ancestors had names for canoes of different sizes, in contemporary Chamorro only the word “galaide”, a paddling canoe, remained in common use up to modern times. Centuries ago, sakman were the largest open-ocean canoes, designed for voyages between islands. Their decimation at the hands of the Spanish caused the use of the word “sakman” to drop from the Chamorro vocabulary. However, the work of the Chamorro Maritime Renaissance has revived the use of “sakman” in everyday speech to refer to large Chamorro sailing canoes. 500 Sails follows this modern usage.

Historic Context

In the 16th and 17th centuries, Europeans who came to the Marianas marveled at the sight before them — hundreds of Chamorro sailing canoes quickly surrounding their ships, sailing circles around them at speeds that were two to three times greater than their fastest vessels.

Figure 1. Chamorro canoes during the Spanish Era



First contact Western visitors to the Marianas marveled at what they saw:

"...their outrigger boats passed by our ship very quickly even though we were under full sail...they are like dolphins bounding from wave to wave." — Navigator Antonio Pigefeta, with Magellan's squadron, 1521

"We were no more than two leagues from [the island] when fifty or sixty proas under sail surrounded the fleet. These proas were furnished with lateen sails of palm mats and were as light as the wind...The day had scarcely begun when a great number of these proas appeared about us...more than four or five hundred around the ships..." — Legazpi aboard the *San Pedro*, 1565

"Islands of the Lateen Sails"; [sic] an appropriate name...on account of the great quantity of canoes that were seen to come out of these islands to the sea, all with sails – as soon as these islanders had seen our ship, that it seemed they covered the sea all around us...For a while they gave us great pleasure and a wonderful entertainment, to see their canoes so well made, of narrow boards painted in various colors and skillfully joined and laced together, in a fine and very beautiful form, so light that they looked like birds that fly in that sea..." — Carlettis, Italian traders aboard the *San Pablo* in 1596

"...the canoes were coming out from all sides to barter. There must have been over 200 canoes and aboard each two, three, four and five men...Their canoes are very beautiful and well made...they knew how to handle them well, sailing before the wind rather skillfully..." — Oliver van Noort, 1600

"The natives are very ingenious beyond any people in making boats...and therein they take great delight...I do believe they sail the best of any boats in the world... The native Indians are no less dextrous in managing than in building these boats. By report they will go from hence to another of the islands about 30 leagues off, and there do their business and return again in less than 12 hours. I was told that one of these boats was sent express to Manila, which is above 400 leagues, and performed the voyage in four days' time." — William Dampier, 1686

"...by what I saw, I believe (they) may run twenty miles an hour, for they passed our ships like a flying bird." — Woodes Rogers, 1710

But it was all to end. In 1668, Spanish soldiers and missionaries established a permanent settlement on Guåhan. In a bloody struggle over the next 30 years, the Spanish succeeded in taking over the islands, aided by diseases that the Spanish and other Europeans brought with them. The colonization of the entire Chamorro homeland was complete by 1698, when all the Chamorros living in the islands north of Luta were forcibly relocated to Guåhan. To prevent the Chamorros from returning to their home islands, the Spanish banned travel on the open ocean and the construction of sailing canoes. By the late 1700s Chamorro sailing canoes ceased to exist.

Fortunately, a visit to the Marianas by the English in the mid-1700s preserved a Chamorro sakman in the form of a highly detailed drawing. In 1742, the English ship *Centurion* arrived at Tinian under the command of Admiral George Anson. They captured five Chamorros and two Spaniards who met their ship in a 40-foot sakman. Anson and his crew were fascinated by the Chamorro sakman, which had become famous among European seafarers. Many accounts had been written about its speed and design. Nautical draftsman Lieutenant Peirce Brett dismantled the sakman so that he could measure and record its parts, creating the blueprint for a "Chamorro Flying Proa" that we know today as the "Anson Drawing".

From the shore, Anson and his crew could see other sakman sailing in the distance. Anson later wrote...

"The name 'flying proa' given to these vessels is owing to the swiftness with which they sail... From some rude estimations made by our people of the velocity with which they crossed the horizon at a distance while we lay at Tinian, I cannot help believing that with a brisk tradewind they will run near 20 miles an hour, which, though greatly short of what the Spaniards report of them, is yet a prodigious degree of swiftness... These Indians are no ways defective in understanding, for their flying proas in particular,

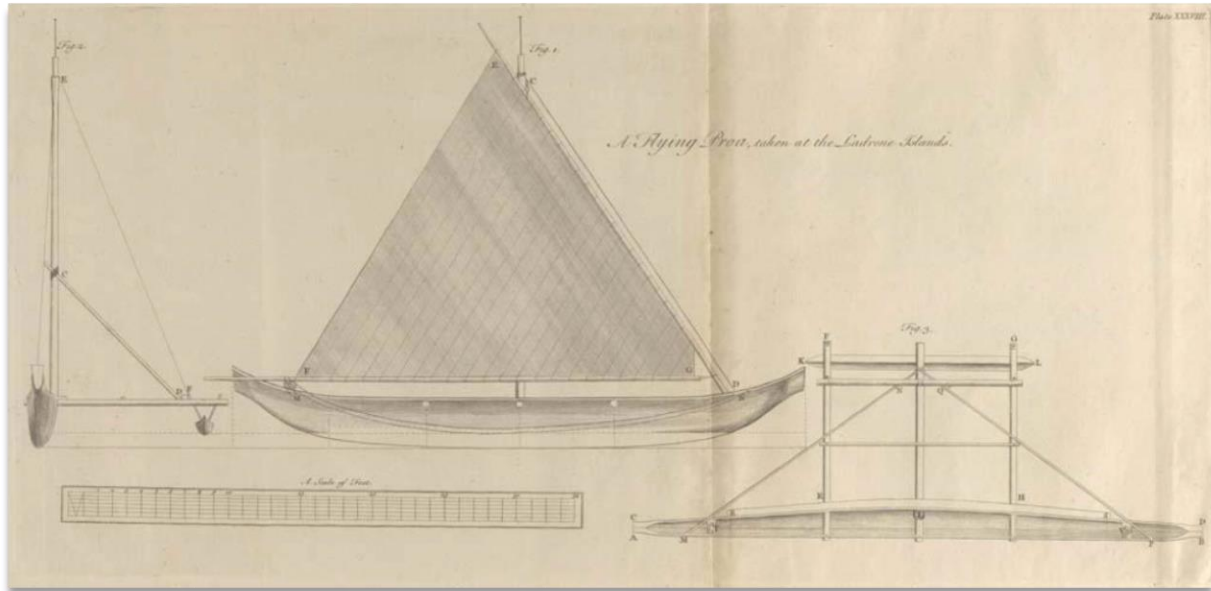


Figure 2. "Anson Drawing" by Piercy Brett 1742 drawn on Tinian

which during ages past have been the only vessels employed by them, are so singular and extraordinary an invention that it would do honour to any nation, however dextrous and acute, since, if we consider the aptitude of this proa to the navigation of these islands, which lying all of them nearly under the same meridian, and with the limits of the trade wind, require the vessels made use of in passing from one to the other to be particularly fitted for sailing with the wind upon the beam; or if we examine the uncommon simplicity and ingenuity of its fabric and contrivance, or the extraordinary velocity with which it moves, we shall in each of these articles, find it worthy of our admiration, and deserving a place amongst the mechanical productions of the most civilised nations where arts and sciences have most eminently flourished..." — Anson's Voyage Round the World: In the Years 1740-1744

Since the loss of their maritime traditions, many generations of Chamorros have lived their entire lives without access to the open ocean. By the 1900s, hearing only the Spanish version of history, few Chamorros were even aware that they were descendants of mariners who once built and sailed the fastest sailing vessels in the world.

Sakman Design

The Chamorro sakman has an asymmetrical sahguan (hull) when viewed from the top or the front. The windward side of the sahguan bulges significantly outward in the center like most boat hulls do, while the leeward side of the sahguan is relatively flat. This unique shape reduces down-wind drift because the flat surface makes it difficult for the wind to push the sahguan sideways through the water. The

sahguan also presents a narrowed surface in the forward direction, reducing the volume of water that the sahguan displaces, allowing it to move faster through the water.

The falina (mast) is positioned midway between the length of the sahguan and up against the windward side. It carries a large triangular l yak (sail) that is lashed between the tolang l hi (yard) and the tolang palao'an (boom) that meet at the m ta (bow). The l yak to sahguan ratio is unusually high, meaning that the sail area is greater than most sailing vessels of the same length.

The historic record tells us that the sakman does not have a rudder. Instead, a long-handled pok sai (paddle) with a large, flat blade is used in combination with weight distribution and l yak trim to steer the canoe. Some large sakman built today do employ rudders, called "ulin" in Chamorro.

Sailing Vocabulary

Two major sources influenced the vocabulary below. The first source is the *CHamoru Seafaring Lexicon*, developed in July 2014 by the Guam Council on the Arts and Humanities in which 500 Sails participated. The second source is the "Saina Model Sakman" by Ron J. Castro dated September 20, 2010.

Sakman Parts and Rigging (see Figure 3 "Reference Diagram" below)

Diagram	Chamorro	English / Description
A	sahguan	canoe hull
B	m�ta	outward face of a bow
C	t�'chong	thwarts/seat
D	lucha or p�tgon	outrigger
E	g�het	any pole attaching the outrigger to the hull
F	g�het sanhiyong	outer poles attaching the outrigger to the hull
G	g�het talo'	center pole attaching the outrigger to the hull
H	h�fen g�het	any g�het cross-brace
I	h�fen g�het batalan	a g�het cross-brace near hull
J	h�fen g�het lucha	a g�het cross-brace near lucha
K	gu'ut lucha	"V" pylons carrying the outrigger
L	h�fen lucha	long cross-brace from outrigger to bow
M	falina	mast
N	t�'chong falina	mast step
O	l�yak	sail
P	tolang l�hi	yard
Q	t�'chong l�hi	yard step
R	tolang palao'an	boom
S	t�len m�ta	a stay running from mast top to a bow
T	t�len falina	a stay running from the top of the mast to the outrigger
U	batal�n	planking
V	ag�'ga'	neck of bow
W	tuhong haligen s�hyan	gunnel (or gunwale)
X	ta'talo' s�hyan	keel (bottom of the hull)

Y	håfen falina	spar brace between the mast and the outrigger
not pictured	gigehi	mainsheet (line to the boom used to control the sail)
not pictured	ginedde	lashing
not pictured	godden lailai	a knot used to attach lãhi to tã'chong lãhi
not pictured	poksai	paddle
not pictured	sohgue	bailer
not pictured	tålen låyak	halyard (line used to raise or lower the yard)
not pictured	tåli	any line or rope
not pictured	tinåli	rigging
not pictured	ulin	fixed paddle or rudder

Special Terms

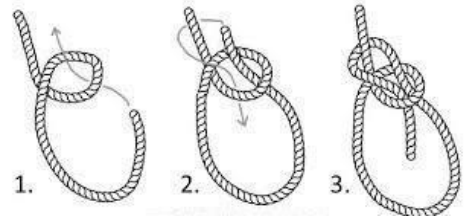
Chamorro	English / Description
godde	any knot
guma sakman	canoe house
lailai	shunt (reposition the sail to the opposite bow to change sailing direction)
mågas	skipper
mamoksai	paddler
pagåsi	to paddle (v)
sanmo'na	fore, forward bow when underway
santatte	aft, rear bow when underway
såhyan	canoe
tåli	rope

Knots

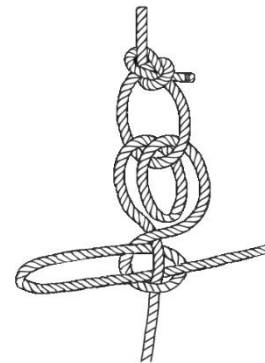
All sailors must know these seven standard knots. To “know” is defined as “able to do the knot with your eyes closed” (i.e. in the dark) and to do it quickly. Being able to tie a knot quickly could be a matter of life or death.

The knots are:

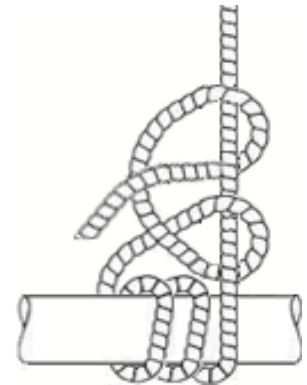
Godden m̄ata (bowline) – A loop that does not tighten when pulled. Used for securing items on sakman (water bottles, slippers, bailers, etc.); tying sakman to anchor or tree onshore; mooring on buoy; fixing loop around a man overboard; and making a permanent loop at the end of the l̄ahi, where the godden lailai is tied after a lailai.



Godden lailai – Used to secure l̄ahi to t̄'chong l̄ahi during lailai. Ends with a quick release loop so the knot can be quickly pulled loose.



Godden go'te (three windings and two hitches) – Used for securing the t̄alen m̄ata at both ends of the sahguan (three winds at the bottom as shown). Also used to attach t̄alen l̄ayak to ḡahet t̄alo after raising l̄ayak (two winds at the bottom with line doubled).



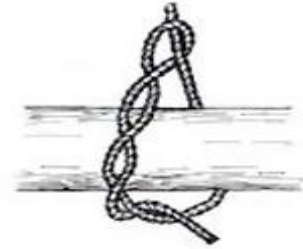
Godden parehu (square knot) – Used for tying two lines together or to secure a line around an object. Should not be completely trusted. Add a half-hitch to each end to make it more secure. Alternatively, the godden parehu can be substituted by tying together two godden m̄ata.



Godden na'maffiōt (taut line hitch/laundry line knot) – This knot slides to tighten or loosen a line and holds well under load. Often used to attach sahguan and lucha to trailers when taking the sakman out of the water.



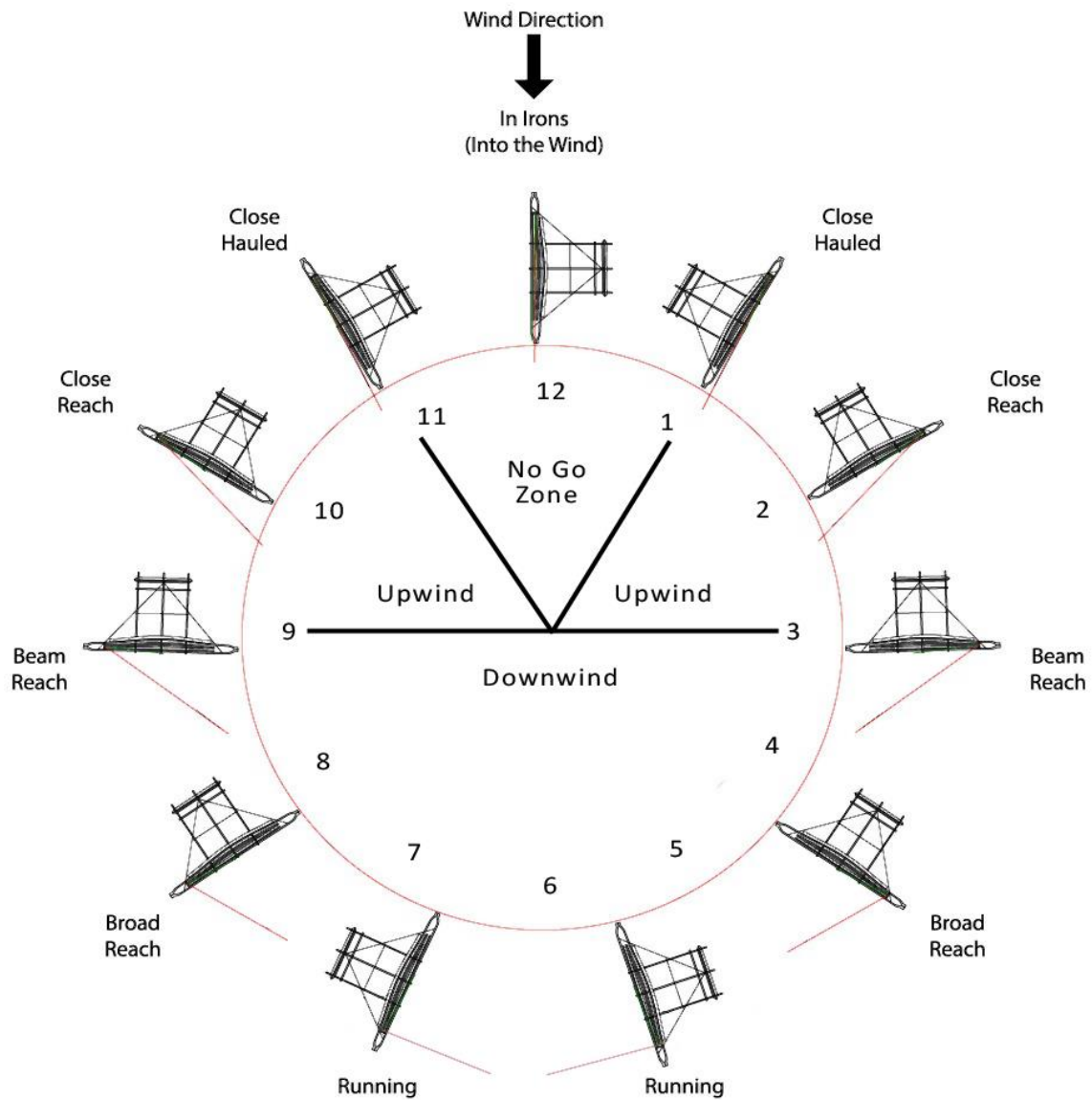
Godden hāla (timber hitch) – For securing the end of rope to a pole. Used to secure the gigehi to the palao'an and the tālen lāyak to the lāhi.



Godden chetun (sheet bend) – Used for joining two lines of unequal diameter.



Points of Sail



In general, keep in mind:

- Lucha should always be on the windward side
- Close to wind means close to the “no go zone” where the canoe cannot move forward
- Fastest speeds are at 10 or 2 o’clock
- “Fun” zone is at 9:30-8:30 or 2:30-3:30
- Downwind means wind at your back

True Wind, Apparent Wind, and Sail Trim

True wind refers to the direction and speed of the wind that blows across the water.

Apparent wind is what is experienced by those on a canoe. Apparent wind is a combination of the true wind and the wind caused by the movement of the canoe through the air. For example, if the canoe is paddled forward when there was no true wind at all, those on the canoe would feel a breeze coming from the front. That breeze would add to or subtract from the speed of any true wind that might appear. It would also affect a change in the angle of the wind as perceived by those on board. The angle of the sail is set according to apparent wind which changes in speed and angle in accordance with the speed of the canoe.

Sail trim refers to the positioning of the sail to maximize power or to help achieve a balance between the forces acting on the lâyak and the sahguan so that the canoe sails easily in the desired direction with minimal correction with the poksai. Weight re-distribution is another form of trim that feeds into this dynamic.

Safety

Basics - No Alcohol

No matter what the activity, alcohol affects balance, vision, coordination and judgement. But in boating, stressors like wind, sun, noise, motion, and vibration can magnify the effects of alcohol and accelerate impairment.

Listen to the Environment

No playing of recorded music please because the sounds around you are not only one of the most beautiful parts of the sailing experience, but they should be actively focused on to alert you to danger. Some of these elements are:

- Wind
- Water
- Fellow crew and passengers
- Sounds of the canoe
- Nearby vessels

Man Overboard (MOB)

Procedure for those who are on the sakman:

- Step 1. Yell “man overboard”
- Step 2. Let gigehe out to stop the sakman
- Step 3. Assign a spotter (not a sailor on poksai, or on gigehe)
- Step 4. Throw an aid (ring buoy, lifejacket, floating device)
- Step 5. Drop sail to further stop the sakman
- Step 6. Paddle or sail to MOB
- Step 7. MOB enters or is pulled on sakman from lucha side

Procedure for those who went overboard:

- Step 1. Yell “help”
- Step 2. Swim towards the sakman if able
- Step 3. Grab offered swim aid
- Step 4. Get on sakman from lucha side
- Step 5. If sakman does not respond and continues sailing: conserve energy treading water, floating on back (survival float). If you do not have lifejacket, use clothing to make flotation device. Continue to float in place until rescued

Open ocean night sailing

- For open ocean night sailing, a long floating line can be dragged behind the canoe as a precaution so that if someone were to accidentally go overboard the line would be there for them to grab hold of immediately after falling overboard

Safety Equipment

- Life jackets – it is required that the sakman carry one (fitting) life jacket for each person aboard. Children and anyone who cannot swim at least 200 meters must wear one at all times. All passengers must wear their lifejacket from sunset to sunrise
- Cell phone in waterproof bag or case (dial 911 to reach Department of Boating Safety)
- Life Ring (to be tossed to MOB for flotation). Do not tie to canoe
- Radio (worn or clipped to rigging). Radio channels selection:
 - Channel 71: for communication between canoes and shore support
 - Channel 13: contacts port and other ocean vessels
 - Channel 16: emergency broadcasts
- Safety box – should be brought and secured on sakman with the line always attached to the handle. Items inside safety box include:
 - First Aid Kit
 - GPS
 - Flares
 - Air horn
 - Whistle
 - Orange distress flag
 - Knife
 - Waterproof flashlight/headlamp
 - Duct tape
- Water (always bring extra)
- Sunscreen

Capsizing

Ways a Sakman Can Capsize

- Lucha rises above sakman – usually from overpowering wind on the l ayak or sudden weight shift away from the lucha
- Swamped, m ata goes down first – can happen when sailing down a large wave into a trough

- Swamped, fills boat with water – usually caused by overloaded canoe, too much weight on one bow in combination with a large wave or boat wake
- Lucha sinks – can happen if a large wave hits from sahguan side, or if there is too much weight on the lucha

What to do While Capsizing

- If in the sahguan, hold on until the sakman is done flipping or jump away from where the sakman will flip.
- If outside the sahguan, jump off, away from where the sakman will flip.

Note that the safest place to be when the sakman flips may be below the surface of the water. Be aware of gu'ut lucha that could poke passengers during capsize.

Recovery

- Make sure everyone is accounted for and assist anyone in immediate distress.
- Collect gear and secure together with line:
 - Poksai
 - Extra tãli
 - Safety box
 - Life jackets and other floatation aids
- Loosen the tãlen lãyak and release the lãyak from the falina and tie the lãyak to the sakman. If the sakman capsizes in shallow water, the falina may bump up against sand, coral, or other marine objects. In such a case, the falina may need to be untied and then unseated from the tã'chong falina.
- Release the lãhi from the tã'chong lãhi by untying the godden lailai.
- Pull any injured or panicked sailors onto lucha side; administer first aid if needed.
- Right the sakman.
- To flip the sakman when the lucha is straight up in the air, pull the lucha down from one of the bow sides or throw a line over the lucha and pull it downward by standing on the sahguan and leaning outward so that the sakman flips back upright. Stay away from under the falling lucha. You may need to go below the surface of the water to avoid the lucha.
- If the sakman is completely upside down with the lucha is floating on the surface of the water, tie a line to the middle of the lucha, run the line over the lucha and the sahguan, brace bodyweight against sahguan and pull lucha up and over the hull, flipping the sakman right-side-up. If too difficult, try rotating the sakman so that the lucha faces into the wind; wind and waves will help push the lucha up into the air.

After righting sakman

- Quickly bail all the water out of sahguan.
- Check for damage to falina or gãhet and make repairs if needed.
- If the falina stayed in place during the capsize, it may be necessary to lower it so that the tãlen lãyak can be re-threaded through the loop or ring at the top of the falina. If the falina was removed after capsizing, then it will be to be reseated and tied to the tã'chong falina, and the tãlen lãyak can be re-threaded through the loop or ring at the top of the falina.

- Raise the falina.
- Tie l hi back onto t 'chong l hi using godden lailai.
- Ensure l yak is neither secured against sakman nor tangled in lines.
- Slowly pull t len l yak to let water flow out as sail raises to avoid breaking the falina or the l hi.
- Inspect all rigging and adjust if necessary.
- Secure all gear.
- Continue sailing to destination. If there are injuries or needed repairs, the m gas makes the determination of whether to continue the voyage, change course to a landing point or call for help.

Avoiding Capsizing

When the lucha rises too far above the water:

- **IMMEDIATELY** release the gigehi.
- Quickly lift poksai out of the water, allowing the sakman to turn into the wind.
- Do not lean or shift weight towards the l yak.

When lucha begins to sink into the water:

- This normally occurs when there is too much weight on the lucha. Move the sailor(s) more inward toward the sahguan.
- To avoid sinking from an oncoming large wave, steer more into the wave so the lucha is not forced downward.

When the sakman is at risk of nose diving in high seas:

- Shift the passenger weight rearward in the sakman and on the lucha so the weight makes the front of the sakman ride higher in the water.

Include capsizing avoidance instructions when briefing new crew and passengers prior to getting underway. Emphasize that anyone assigned to sit over or near the lucha must remain there to counter the force of the wind against the l yak to avoid capsizing. Any reassignment while sailing must be coordinated, with one person moving off the lucha while another moves onto the lucha, maintaining the weight balance. Emphasize that even stepping off the lucha into shallow water can sometimes lead to a capsize, so inexperienced crew and passengers should ask an experienced crewmember before leaving their position over the lucha. If an inexperienced person should take the gigehi, they should be reminded that they are to let go of the gigehi immediately if the lucha begins to lift unintentionally. It is a good practice to ask new sailors seated over the lucha or holding the gigehi what they should do if the canoe begins to capsize a few times during their first experiences sailing.

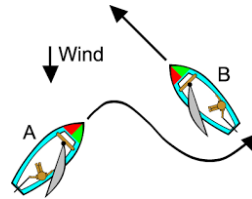
Rules of the Road

These rules are most important in busy waterways and inside channels where boats are navigating within a limited space. The rules govern what happens when two vessels determine which vessel has "right of way", meaning the right to maintain course, and which must "give way", meaning allow the other vessel to maintain course and to move out of their way if necessary.

Generally, under the Rules of the Road, more maneuverable boats yield to less maneuverable boats, i.e. sailboats get right-of-way over motorboats and windsurfers, while malfunctioning vessels always get right-of-way.

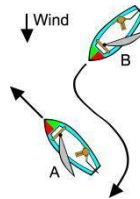
Rules for when both vessels are under sail:

- The boat on a starboard tack has right-of-way.



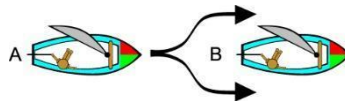
B has right-of-way

- If both are on the same tack, the downwind boat has the right-of-way.



A has right-of-way

- A boat that is being overtaken has right-of-way and must hold its course until passed.



B has right-of-way

Rules for when both vessels are under power:

- When two power boats converge, the vessel approaching from the starboard side has right-of-way.
- When two power boats approach head-on, both should turn to starboard.

Rules within channels:

- In channels, smaller boats should alter their course to avoid much larger boats in plenty of time and make their intentions clear. This is because it is harder for larger boats to maneuver in channels.

Traditions and Protocol

Maritime traditions and rules of conduct exist worldwide and develop out of collective experiences of mariners. Many traditions are nearly universal while others are specific to a location, culture or marine occupation. The following practices are common throughout Micronesia where they have been in practice for thousands of years. We know from the historic record that some were practiced in the Marianas in ancient times. Others we can assume were practiced based on their compatibility with Chamorro cultural norms on land and the practical need for such practices at sea. These traditions and protocols are a starting point and will certainly evolve over time as we continue to revive our maritime traditions.

- **The m̄gas is in charge before, during and after a voyage of any length.** Crew and passengers are extremely respectful of the m̄gas and follow orders without question or hesitation.
- **A traditional navigator on a voyage has a position of highest authority.** Even the m̄gas will defer to the navigator.
- **In a voyage with multiple canoes a lead canoe and navigator will be designated.** They will choose the course and make decisions for fleet.
- **The m̄gas' authority begins with the selection of crew and ends when the m̄gas releases the crew on land after the voyage and related activities subsequent to a voyage are complete.** This pertains to the entire voyage not just the intermediate legs of the voyage. Voyagers (crew and passengers) must have the permission of the m̄gas before leaving the group even temporarily during the entire voyage.
- **Voyagers clear their minds of negativity and leave all bad feelings and personal conflicts behind when they join a voyage.** To do otherwise invites bad interactions and consequences.
- **Voyagers practice inafa' maolek. They are courteous, kind, respectful and considerate.** They refrain from excessive behaviors that can annoy others. This includes loud or continuous talking, indulging in alcohol, puguu or recreational drugs, failing to respect boundaries and personal space, having poor personal hygiene, and making unnecessary and sustained noise.
- **The canoe is sacred.** Voyagers know this and always, the canoe is treated with reverence and care.

Lum̄yak (Sailing)

Pre-sail Checklist

The checklist should be printed and kept readily available where canoes are stored. All crew and passengers should be present when going over the checklist prior to departure.

- Check conditions
 - Tide table
 - Wind forecast
 - Weather forecast
 - Observe wind, clouds, currents, and other natural elements.
- Safety equipment (secured to sakman as appropriate)
 - Life jackets for all (children and anyone who cannot swim 200 meters must wear one)
 - Radio or phone in waterproof container
 - Ring buoy (NOT tied down)

- Safety box (secured with the line on its handle)
- Drinking Water
- Sunscreen
- Other equipment
 - Poksai – two
 - Sohgue – two, tied inside sahguan
- Check the rigging
 - Tålen falina
 - Tålen mâta
 - Lashings throughout sakman
- Log entry both before and after the voyage. Log remains in Guma Sakman for short sails but is taken on the sakman for long voyages.

Launching the sakman

Getting the sakman out of the Guma Sakman and into the water can be challenging. Usually there will be a cart under the sahguan and another under the lucha. Be sure that everyone involved knows how the carts work and is briefed on how the sakman will be moved to avoid personal injury or damage to the carts or the canoe.

If possible, the sakman should go into the water with the lucha facing into the wind with the layak down. If terrain and space dictate otherwise, simply rotate the sakman so that the lucha is facing into the wind once it is in the water.

It may be necessary to lailai before getting underway. This can be done before entering the water or while in shallow water without raising the lâyak: two sailors can lift the lâhi and palao'an together with the lâyak still unfurled, reposition them, and tie the lâhi to the tâ'chong lâhi.

Store the carts either in the Guma Sakman, or on the beach out of reach of waves, with consideration of tidal changes.

Getting Underway

Position the sakman so that the lucha is windward. Ensure that the free ends of both the gigehi and the tålen lâyak are tied to the gâhet talo' inside the sahguan (in a fiberglass sakman, tie them to the sleeve that encases the gâhet talo'). This will prevent these lines from flying downwind if accidentally dropped. Ensure that all rigging is in order and no lines are tangled or out of place. Check to be sure that the tålen mâta and the tålen lucha are tied securely and with tension. Check that the hâfen falina is lashed securely in place, and that the falina is tied to the tâ'chong falina and to the inside face of the sahguan on the lucha side of the canoe.

Raise the lâyak by pulling the tålen lâyak until the high end of the lâhi is near the top of the falina, but not so high that the lower end is lifted out of the tâ'chong lâhi. Be sure that there is some lâhi weight on the tâ'chong lâhi so that it sits firmly. Note that as long as the falina is straight up, the lâhi will rest evenly on both tâ'chong lâhi. If the falina is not straight, the lâhi may not reach one of the tâ'chong lâhi when attempting a lailai.

As the lâhi is raised, the lâyak will catch the wind and swing downwind, away from the sahguan. Hold the gigehe but do not restrict the lâyak as it moves downwind, otherwise the wind will be caught and the sakman will begin to move. Continue to hold on to the gigehe and be ready to reposition the sakman to keep the lucha windward so that the lâyak stays pointing downwind. If the wind pulls the tolang palao'an too high, it may allow the lâyak to fold closed, lose the wind that blew it upward, and fall freely, possibly onto a sailor or passenger. The gigehe can be used to keep the tolang palao'an from being blown too high.

Have all passengers board except those keeping the sakman in position. The latter board last with the sailor with the poksai in position and ready to steer when the sailor with the gigehe pulls it to engage the wind. The sakman will begin sailing.

Steering

While underway, the sakman will tend to want to move toward the wind. The sailor who is steering uses this to their advantage by either allowing the sakman to move unimpeded toward the wind, or countering this movement by pushing the poksai blade into the water on the leeward side of the canoe, sliding it against the side of the sahguan. The deeper the poksai goes into the water, the more the sakman is forced in the downwind direction. By continually adjusting the depth of the poksai, the sakman can be steered in either direction. Keeping it against the side of the canoe stops water from getting between the blade and the sahguan and forcing the blade outward into the water where it is difficult to control. When quick or large adjustments are needed, the poksai can be used to “pry” the canoe to windward by pulling the handle inward (towards the lucha) and twisting, with the neck of the poksai against the top of the sahguan. This will position the face of the blade against the oncoming water resulting in maximum drag and maximum movement away from the wind.

If the canoe’s tendency to move towards the wind is not enough to accomplish a needed quick turn, the poksai can be applied to the windward side of the canoe. An easy “rule” to remember when steering is “the canoe will be pulled to the poksai”.

Using the poksai creates drag. This does turn the canoe, but it also slows it down. So it is important to minimize the use of the poksai by making small adjustments quickly to maintain direction. Waiting until the canoe has gained momentum in the wrong direction requires much more drag to correct than quick action with the poksai.

In general, steering is a team effort by both the sailor handling the gigehe and the sailor handling the poksai, since wind pressure on the lâyak also influences direction. Too much wind power on the lâyak can make steering by poksai difficult, so the sailor with the gigehe may need to spill some wind by letting the gigehe out some to reduce power. Passengers also influence steering with their body weight. Weight to the rear lifts the front of the canoe, creating a pivot point toward the rear where the poksai is applied. This makes it easy to turn the sakman with the poksai. Weight forward causes the front of the canoe to dig in, creating resistance to turning but also adding directional stability. More information on how weight distribution affects steering is provided below under “weight and balance”.

The sailor steering must take care to keep the lucha to windward. Allowing the lucha to move to the lee of the sahguan can trap the lâyak against the falina and may cause a capsized. Sudden changes in wind

direction as well as wave action can quickly lead to the lucha moving to leeward if the sailor steering fails to act quickly.

If lucha does ends up on the wrong side of the wind, it will be necessary to lower the l yak and turn the canoe so that the lucha is to windward again. The easiest and sometimes the only way to do this is to use both poksai as follows. Two sailors with poksai take their positions at opposite ends of the canoe. Using the “prying” method, one paddles outward on the flat side of the sahguan, while the other simultaneously paddles outward on the lucha facing side of the sahguan. This will rotate the canoe. Once the lucha is windward again, the l yak can be raised and the canoe can resume sailing.

When steering the canoe it is critical to consider how wind and seas affect the canoe. Unlike with a bicycle or a car, simply steering a canoe directly to a destination point ahead and moving towards it will not necessarily get you there. It is even possible to turn completely around while pointing the canoe at the destination point the entire time. This is because of canoe drift caused by the wind, waves and current. To steer directly toward any point requires a third point of reference. This can be something behind the destination like a mountain, tree, building or even a distant cloud, that the person steering keeps lined up with the destination. It can also be something behind the canoe, in which case the person steering keeps the canoe precisely in between the reference point behind and the destination ahead. Less commonly, it can be a feature of the water between the canoe and the destination that does not move, such as a buoy. Keeping these three points, the destination, the reference point, and the canoe lined up eliminates drift.

When steering a close-hauled canoe, it is important to steer somewhat upwind of the destination. This is in case a change of wind direction forces the canoe to move downwind and away from the destination. As the canoe nears the destination, steering is adjusted gradually toward the destination until the canoe is pointing directly to the destination when close to arrival.

Avoiding Collisions

To avoid colliding with a stationary object or moving object while sailing:

If possible, pass a healthy distance away.

When passing close to a stationary object, pass downwind of it. An exception to this rule is when there is a very strong current that is more influential than the wind. In that case, pass down-current.

To determine if your canoe is on a collision course with any object, whether stationary or moving, pick a reference point on the canoe between you and the object. Stay exactly where you are on board the canoe and check to see if the object moves in relation to the reference point. If it does not move, you are on a collision course. If so, make a small course change and continue to monitor the situation using the same method until the object is no longer a threat.

Lailai

When a canoe is underway, the wind will be coming over one side of the canoe or the other. If that is the left side when looking forward, the canoe is said to be on a “port” tack. If the wind is coming over the right side of the canoe when looking forward, the canoe is on a “starboard” tack. A sakman can change directions easily by simply adjusting the sail and using the poksai, as long as it remains on the

same tack. However, if the canoe needs to turn so that the wind comes over the other side, in other words if it will change tack, then the canoe must lailai.

A lailai allows the sakman to “change tack” while keeping the lucha to windward. This is done by untying the lower end of the l hi from the t 'chong l hi, lowering it into the water on the l yak side of the canoe, dragging it (along with the tolang palao'an and the l yak) to the opposite end of the sakman and securing it to the t 'chong l hi there. Note that the gigei must pass under both the l hi and the tolang palao'an as it is being moved to the other side, and it is usually necessary to help it do so. This is easiest when the l hi begins to rise as it approaches the other side. It can also help to have someone tug down on the t len l yak to lift the l hi higher so that the gigei can pass below it more easily. Once the l hi is in position and being tied, the gigei can be pulled to engage the sail and start the canoe moving in its new, opposite direction. Steering will need to be done now from the opposite side. To make this easier, there are usually two poksai aboard – one for each end of the sahan.

Weight and Balance

Proper weight distribution across the sakman is key for safety, maximizing speed, and ease of sail. In order to avoid flipping the canoe, have a sailor outside the hull toward or even over the lucha to counter force of the wind on the sail. Additionally,

When close hauled:

- Keep weight forward, but move weight rearward if necessary to aid steering response.

When reaching:

- Adjust weight generally towards the rear to aid steering response.

When running:

- Keep weight toward the rear. This will raise the m ta, making it harder for the canoe to nose dive at the bottom of waves, and will aid steering.

In strong wind or heavy seas:

- Balance weight across the canoe, making the sahan even (horizontally) so that it's less likely to nose dive and take on water.

When the canoe is heavily loaded:

- Balance the weight evenly.

Lowering the L yak

- Slow the sakman as you approach the landing point by allowing it to turn into the wind.
- Release the gigei to further slow the sakman.
- Untie the t len l yak while holding it to keep the l hi from free-falling.
- Lower the l hi and l yak by carefully guiding the t len l yak upward.
- As the l yak descends, the crew seated inside sahan help guide it into the sakman, folding it back and forth over the top of the tolang palao'an until the entire l yak is folded and the l hi also lies on top of the tolang palao'an.

- Wrap the tålen løyak around the lāhi and tolang palao'an and tie it to secure them.

Post-sail Checklist

NOTE: All crew members and passengers should actively and enthusiastically participate in putting the canoe away after sailing. This makes for a fast and pleasant end of the sailing day for all.

- Mågas must record voyage in the sakman's log book.
- Remove safety box (keep line attached to box) and store in a secure place.
- Hang up life jackets to dry.
- Remove trash.
- Remove personal items.
- Bail and sponge out any water.
- Hang something on top of falina to help avoid someone walking into it.
- Tie falina to provide support in case someone walks into it.
- Hang all lines so they can dry (not dripping inside sahguan or lying on ground).
- Cover the sakman in a tarp or coconut leaves if they will otherwise be exposed to the sun for a long period of time.
- If last in Guma Sakman:
 - Turn off water and lock bathroom.
 - Close and lock window shutters.
 - Close and lock doors and shutters.

Using the Log Book

The log book is a legal document and should be prepared keeping in mind that this information may be used as evidence in court. The time logged is also a legal record of crew and mågas sea time. The mågas is responsible for completing the log book entries.

Information that should be included is:

- Date
- Name of sakman
- Mågas' Name
- Crew Names
- Course and/or Destination
- Departure Time
- Arrival Time
- Details of any abnormal conditions
- Any significant events
- Capsizes
- Physical contact with any floating object or vessel
- Injuries
- Distress signals received and any assistance given
- Damage to sakman
- Maintenance or repairs needed

Hazards of Navigation

Marine Life

- Jelly fish
- Portuguese Man o' War
- Sea Urchins
- Stone Fish
- Trigger Fish
- Stingrays
- Sharks
- Eels
- Sharp Coral
- Fire Coral
- Barracudas

Human and Active Vessels

- Swimmers
- Divers
- Fishermen
- Jet skis
- Parasailers
- Wind surfers
- Submarines
- Other sailing vessels
- Prepositioned ships

Geography

- Reefs
- Shallow sections of lagoon, including sand bars (they move)
- Wrecks – submerged and visible
- Channel markers
- Buoys
- Markers/pipes (often used by paddlers)
- Public swim areas

Appendices

Appendix A – 500 Sails Sailing Exam Requirements

- PREREQUISITE TO CLASS: Be able to swim 400 meters in open water unassisted, with no swim aids, and without stopping or standing.
- PREREQUISITE TO CLASS: Be able to tread water for one hour.
- Be able to tell the story of the Anson Drawing and explain the basic unique features of the Chamorro sakman.
- Must know the sailing vocabulary and be able to identify the parts of the sakman including the standing rigging in the Chamorro language.
- Be able to do all seven knots quickly with eyes closed.
- Be able to explain the points of sail and how they affect the speed of the sakman.
- Be able to explain the method of tacking to sail to a destination up-wind.
- Be able to identify the direction of the wind.
- Be able to complete each step of man overboard recovery both on the sakman and in the water.
- Be able to list the safety equipment that must be carried on a canoe.
- Be able to describe the three ways that a capsized canoe can occur.
- Be able to describe weight distribution strategies on a canoe under all points of sail.
- Know how to jump out of a capsizing sakman from any location on the canoe.
- Act as mângas during a capsize and oversee recovery.
- Be able to determine which boat has right-of-way in any given situation.
- Demonstrate how to prepare and launch the sakman.
- Be able to maneuver around a predetermined course.
- Demonstrate how to turn the sakman 180 degrees using the poksai.
- Demonstrate how to put the sakman away.
- Demonstrate correct use of log book.
- Be able to list types of hazards with several examples.
- Be able to identify basic first aid for treating jelly fish stings.

Appendix B – Treating Jelly Fish Stings

(Excerpt from American Red Cross Lifeguarding Manual 2016)

- a. The stings of some forms of marine life not only are painful, but they can make the victim feel sick, and in some parts of the world, they can be fatal. The side effects of a sting from an aquatic creature can include allergic reactions that can cause breathing and heart problems, as well as paralysis and death.
- b. If the sting occurs in water, the victim should be moved to dry land as soon as possible. Emergency care is necessary if the victim has been stung by a lethal jellyfish, does not know what caused the sting, has a history of allergic reactions to stings from aquatic life, has been stung on the face or neck, or starts to have difficulty breathing.
- c. The basic care steps for jellyfish stings are to remove the victim from the water, prevent further injection of poisonous material by deactivating or removing nematocysts (stingers), and controlling pain. There are some differences in specific care based on the region and the species of jellyfish. The supervisor of the aquatic facility should inform you of specific treatment recommendations and provide you with photographs of the jellyfish to aid in identification.
- d. To deactivate the stingers/tentacles for most types of jellyfish in most waters in the United States, remove any remaining tentacles with gloved hands, a towel or the pads of your fingers. Flush the injured part in salt water as soon as possible for at least 30 seconds to offset the toxin. Do not rub the wound or apply fresh water, ammonia, rubbing alcohol, vinegar or baking soda, because these substances may increase pain.
- e. Instead, use hot-water immersion (as hot as can be tolerated) for at least 20 minutes, or until pain is relieved. If hot water is not available, dry hot packs or, as a second choice, dry cold packs also may be helpful in decreasing pain. Do not apply a pressure immobilization bandage.

Appendix C – Saipan Lagoon Depths

