



**South Carolina
Aquarium**

DIVE TEAM

**Volunteer Diver Policy Manual
2016**

Revised 1/07/16

Mission Statement

It is the mission of the South Carolina Aquarium Dive Team to provide excellence in animal care and husbandry, to actively support the educational, conservation, and research endeavors of the South Carolina Aquarium, and to provide a memorable, positive guest experience to all those who visit our facility.

Welcome to the South Carolina Aquarium Volunteer Dive Program!

The purpose of this manual is to assist you in learning the basics of being a volunteer diver at the South Carolina Aquarium. There is a lot to learn, most of which cannot be read in a manual. Feel free to approach the Dive Operations staff or team leader with any questions or concerns you may have regarding the volunteer dive team and their duties. **After you have read the manual, sign the enclosed Statement of Understanding form and return it to Dive Operations.**

Thank you for sharing your time and talents with the South Carolina Aquarium Dive Program. You make it all possible!

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Management of the Volunteer Dive Program

The Husbandry and Volunteer Departments of the South Carolina Aquarium (SCA) cooperate in the management of the Volunteer Dive Team.

The Husbandry Department, primarily Dive Operations, supervises the volunteer dive program on a daily basis. Dive Operations coordinates the dive schedule for daily dives and special events, provides both dive and husbandry training, and maintains all dive gear repairs. On days the Dive Operations staff is not onsite, a qualified Dive Person in Charge (DPIC) from the Husbandry Department will be covering the Great Ocean Tank (GOT) and dive needs.

The Volunteer Department is responsible for the initial recruitment of applicants via advertisements and for the subsequent receipt of applications. At various times, this department contacts applicants in order to initiate general aquarium training classes. In addition, the Volunteer Department handles relevant administrative tasks as part of its larger volunteer coordination, including distribution of parking passes, uniforms and other non-diving needs.

In order to efficiently work as part of the team, divers are responsible for reading memos, letters, etc., that are sent to them. Such correspondence will also be posted on the bulletin board in the dive locker room. It is important to adopt a routine of checking e-mail daily and the bulletin board whenever you are on duty.

Diver Commitment and Status Classification

Generally, a one year commitment is required to become a volunteer diver. However, we realize that unexpected events may arise that temporarily prevent diving. There are several options for taking time off from the commitments of the Volunteer Dive program:

- 1) Inform the dive office of any conflicts before the schedule is generated.
- 2) Take a sabbatical for up to three months by informing Dive Operations in writing. Your spot will be saved.
- 3) Become inactive. A replacement will take your spot. Once you decide to become active again, you will be considered for the first available opening.
- 4) If you do not expect to return, you may formally resign by notifying Dive Operations and the volunteer office.
- 5) If you have any medical procedures that keep you from diving, a written note from your doctor clearing you to dive again must be submitted.**

Scheduling

Each volunteer diver is required to provide SCA a minimum of two days per month. Standard shift hours are **8:00am-4:30pm**. The following guidelines apply to scheduling:

- Divers are responsible for communicating changes in their dive dates to the Dive Operations staff by the 1st of the prior month.

- On the 1st of the month Dive Operations will send out the proposed schedule for the following month. Standby divers will then fill in the gaps on the schedule by notifying Dive Operations when they are available. No more than 7 divers typically will be scheduled for any day.
- **The final schedule will be sent out by the 20th of the prior month. It is the diver's responsibility to find a replacement once the final schedule is published.** All divers have access to email our list-serve at scadiver@scaquarium.org . If/when a replacement is found, Dive Operations must be notified of the change.
- The **list-serve** is to be used only for aquarium related information, personal gear swap, or trip planning. NO dive shop or commercial information is allowed out of respect for our relationships with all dive shops and other dive entities. We don't want to upset or discriminate against anyone.
- Although your position is a non-paid one, it requires the same commitment and dedication as a regular job. You wouldn't consider doing a 'no-show' at your work place; please treat your fellow divers with the same respect.
- Divers that must cancel last minute must send an email to the list-serve, call Dive Operations **and** call Security (843) 579-8507.
- If you are sick and unable to dive, you should email the listserve looking for help, even if you are planning on coming in to help topside.

Appearance and General Conduct

Remember, to the public, volunteers are representatives of the entire South Carolina Aquarium. Whether in or out of the water, divers must present themselves appropriately. Your "dry-side" appearance should be neat and conservative. Uniform shirts are available through the aquarium and must be worn as instructed with khaki-colored shorts or pants. Shoes must have both a closed toe with a heel, and should be neutral in color.

Volunteer divers have access to the dive locker room, which also includes a shower and changing facility. Lockers are provided for volunteer divers for day use only. Divers must supply their own towels.

Divers must change out of their wet gear and into their aquarium uniform when entering the break room area, food prep, another exhibit or public areas. Divers may go offsite for lunch providing they return on time for the next activity. If you will not be back immediately after lunch, you must notify the team leader.

Behind The Scenes Tours

Visiting the Behind the Scenes (BTS) areas is a privilege that SCA offers to volunteers. However, ***no family, friends, or guests are permitted in "behind the scenes" and back-up exhibit areas without prior approval and an "Official Visitor" badge.***

All BTS requests from volunteer divers should go through Dive Operations, preferably via email. Please give as much notice as possible to ensure you will be able to give the tour to your guests. Please be flexible with time as animal care requirements will override BTS tours.

When submitting a request, please include the names of your guests and the time you expect to take them BTS. Dive Operations will inform Security, and they will have BTS badges waiting for your guests. Dive Operations will also reserve the time slot you are requesting to prevent multiple tours at the same time. Please limit BTS tours of the GOT to 30 minutes.

Dive Operations will grant BTS tours of the GOT area only. If you wish to tour other backup areas, you must specify that, too, so that the appropriate Husbandry member(s) can be contacted for approval.

Approval for a BTS tour does not grant admission to your guests. You must use membership or tickets to get your guests into the building.

You must stay with your guests at all times while they are BTS. Please keep them grouped together. To view the top of the GOT, use the visitor side opposite from the diver equipment side. Please do not go past the gate by the shark feed area. Guests may not feed the fish.. Remind guests not to put hands in the backup tanks.

Welcome to the Team

Diving at the South Carolina Aquarium is a privilege to be enjoyed. Again, welcome to this exciting and rewarding dive program. We look forward to you joining our team!

Roles and Responsibilities

Dive Safety Officer

The Dive Safety Officer (DSO) ultimately makes all decisions regarding both the dive team and the duties to be carried out by the divers, as well as developing procedures by which dive candidates are evaluated and trained. In addition, the Dive Safety Officer is responsible for the husbandry of the GOT and the animals therein, and will take all actions necessary to ensure that these animals are properly cared for.

Assistant Dive Safety Officer

The Assistant Dive Safety Officer (ADSO) works with the DSO to manage the dive program, dive volunteers, and assist with care of the GOT.

Dive Person in Charge

The Dive Person in Charge (DPIC) is a paid staff member that is qualified to supervise a dive team in the absence of Dive Operations staff. A DPIC is required to be onsite for all dive activity at SCA.

Team Leader

Team leaders are volunteer divers that are responsible for the daily activities of each day's dive team. They are chosen by Dive Operations based upon their diving skills, reliability, responsibility, initiative and attitude.

A team leader's duties include but are not limited to:

- Proper feeding of animals and cleaning of the GOT
- Proper completion of opening and closing duties
- Ensuring that food preparation instructions are carried out
- Ensuring that every diver **returns to the surface with at least 1000 psi on each dive**
- Ensuring that both the dive log and the feed log are correctly completed
- Ensuring that gear in need of repair is properly labeled and set aside for repair
- Ensuring that all dive equipment is properly disinfected, rinsed, drained, stored and accounted for at the end of the shift

Volunteer Diver

A volunteer diver's primary task is the care and maintenance of the GOT and the animals residing therein.

Duties include:

- Preparing food for the day's feeds
- Maintaining a clean environment for the animals
- Diving in the exhibit at the scheduled times
- Performing daily dive communication shows
- Keeping aware of changes in the exhibit and throughout the SCA
- Detailed observation and record keeping
- Maintaining a professional level of diving skills
- Ensuring that the AAUS computer based individual dive log is completed at the end of each day <http://sca.diveaus.com>

In addition to feeding fish, a diver needs to be familiar with fish behavior, adhere to SCA's appearance guidelines, maintain clean/safe work areas, and function well in a team environment. Occasionally, a volunteer diver will assist staff in another area as needed. As for diving itself, safety is the diver's main concern. The volunteer diver must be familiar with all safety procedures as specified by the South Carolina Aquarium. The volunteer diver must always represent the South Carolina Aquarium in a professional, courteous, and knowledgeable manner.

Basic Requirements and Evaluation Process For Divers

Minimum Qualifications

18 years of age or older

Advanced diver certification or equivalent

Able to make required time commitment: two 8-hour days per month for 1 year

Step 1: Volunteer Orientation and Preliminary Interview with Dive Safety Officer

Step 2: Written Test

40 questions intended to be a basic dive skills and knowledge review.

Step 3: CPR/First Aid and Emergency Oxygen Provider Certifications

Current certifications in CPR/First Aid and Emergency Oxygen Provider are required to dive at the Aquarium. These certifications can be acquired at any time during the evaluation process. For convenience, we offer Divers Alert Network (DAN) "First Aid for the Professional Diver" for the cost of the materials only. This certification was designed especially for aquariums and public dive settings, and covers CPR, First Aid, AED, O2 Provider, and Hazardous Marine Life First Aid. Classes are offered regularly. Other certifications are accepted, but divers must maintain current certifications.

Step 4: Physical Evaluation

All divers at the South Carolina Aquarium must fully meet the AAUS physical standards for diving as outlined in *AAUS Appendix 2, Medical Evaluation*. The Medical Evaluation form must carry the signature of a physician who meets SCA requirements to verify that you meet these standards.

To simplify this process, The South Carolina Aquarium has established a relationship with Dr. Lance Davis (Roper Hyperbaric Director). Dr. Davis offers our divers a reduced rate to support our dive program. Prices vary based on age, ranging from \$75-\$239 for the complete examination, including the evaluation by Dr. Davis. Please visit <http://drlanceonline.com/divers/> for more information and access to all needed forms. For an appointment, please email Dr. Davis at lanceleedavis@yahoo.com and ask for the "Aquarium Dive Physical."

You may choose to use someone other than Dr. Davis to review your test results and perform your evaluation. However, the doctor you choose must meet at least one of the following credentials:

- 1) US Navy Dive Doctor (DMO)
- 2) NOAA Qualified Dive Doctor
- 3) Board Certified in Hyperbaric and Undersea Medicine
- 4) Qualified staff member of a hospital-based hyperbaric medicine facility
- 5) UHMS approved certification in Diving and Hyperbaric Medicine (DAN)

You may also choose to do your testing at a different facility, but all of the prescribed tests must be included. A general physical examination performed by a non-diving physician that is less than one year old may be reviewed and approved by a doctor who meets the criteria above. However, additional tests to satisfy the AAUS physical may be needed at the diver's expense.

Step 5: Swim Test and Diving Skills Evaluation in Pool

3-hour skills evaluation.

Swim Test (all skills must be performed without swim aids):

Swim underwater for a distance of 25 yards without surfacing.

Swim 400 yards in less than 12 minutes.

Tread water for 10 minutes, or for 2 minutes without the use of hands.

Transport another person of equal size a distance of 25 yards in the water.

Dive Skills (all must be performed comfortably):

Mask removal and replacement

Equipment removal and replacement

Regulator removal and replacement

Controlled Emergency Swimming Ascent

Regulator/Snorkel Exchange

Buddy breathing use and ascent

Alternate air source use and ascent

Buoyancy evaluation

Underwater signs and signals.

Seated pool entry in full gear

Step 6: Full Day of Dry-side Observation (No Diving)

8:00 AM to 4:30 PM (normal shift schedule) on the day you are available to dive.

Observe the dive logistics and help with basic tasks. Complete Exhibit Diving presentation, Exhibit Feeding presentation and Volunteer Dive manual review.

Step 7: Full Day of Dry-side Observation (No Diving)

8:00 AM to 4:30 PM (normal shift schedule) on the day you are available to dive.

Observe the dive logistics and help with basic tasks. Complete Reserve Air Supply System Presentation (RASS) and Dive Computer Presentation.

Step 8: Great Ocean Tank Introductory Dive Day

8:00 AM to 4:30 PM (normal shift schedule) on the day you are available to dive.

Introduction dive in the GOT, our 42' deep, 375,000 gallon exhibit.

Skills covered: RASS Use. RASS use during ascent. Dive Computer use. Controlled Emergency Swimming Ascent and buoyancy evaluation

Final acceptance into the SCA Volunteer Dive Program will be made at the end of this evaluation process by the Dive Safety Officer. Once accepted into the program the new diver will be considered a Diver-in-Training and will follow the outlined training schedule found on page 26 of this manual.

Dive Equipment

Each diver must provide wetsuit, mask, booties, gloves, and hood.

The temperature in the GOT ranges from 73°F to 79°F, depending on the season, so select your wetsuit accordingly. The hood is for protection more than warmth, and we recommend Lycra rather than neoprene.

The South Carolina Aquarium will provide regulators, tanks, buoyancy compensators, weights, and fins to use while diving. For liability reasons, SCA-provided equipment **MUST** be used – no exceptions.

Brightly colored equipment is discouraged. Ideally, all gear should be black to maintain a consistent appearance for our guests. Wet suits are necessary both for warmth and protection, thus ‘shorties’ are not permitted. Divers wishing to use drysuits must provide proof of certification.

Safety Rules and Procedures

Never Dive Alone: As we all know, one of the most important rules of dive safety is **NEVER DIVE ALONE**. Even though the Aquarium seems to be an unthreatening environment, this rule applies here, too.

If a solo dive appears necessary to complete a task, only the Dive Safety Officer or DPIC may give permission. In this case, a dive-certified tender, standby diver and DPIC must remain at the platform until the solo diver returns to the surface. A tether line must be attached to the diver if entering an exhibit with only surface support and Full Face mask with communication is required.

Safety Stops: Safety stops of 3-5 minutes are required at the end of every dive!

Tank Pressure: All divers must surface from every dive with a minimum tank pressure of **1000 PSI**. Normal starting pressure is 3000 psi. Reserve Air Systems must start with 2500psi before every dive.

Dive Log: All dives in the GOT **must be recorded in the SCA Dive Log**. This is an AAUS/OSHA-required document and must be maintained accurately. Anytime someone is breathing compressed air, tending, or standby diver, they must be logged in on the job log whiteboard adjacent to the entry platform. The information on the job log whiteboard is copied at the end of each day to the paper log (located by computer) and then entered into the AAUS Dive Log database on the computer. <http://sca.diveaus.com>

Accidents: All accidents, regardless of how minor they may appear, must be reported immediately. Use the black Motorola radio on **Channel 1** to contact Guest Services. If that fails, call them at 579-8507. **DO NOT CALL 911** unless you have gotten no response from the dive alarm, from Security on Channel 1, or Husbandry on Channel 2. It is essential that Security staff know to guide EMS crews to your location.

In order for divers to be properly covered by the Aquarium's insurance, accident reports must be completed and turned in to HR or the DPIC immediately, no matter how minor the accident or injury. It is imperative that divers follow safety protocol. Do what is best for you and your buddy - play it safe.

Emergency Equipment: There is a wide range of emergency equipment available near the GOT entrance platform, including a ring buoy, a rescue pole, a stokes basket, a backboard, a cervical collar, life jackets, an oxygen kit and a first aid kit. An AED is located by the GOT dive platform and just outside of food prep.

Dive Emergency Alarms: An audible diver emergency alarm system is connected to the GOT at water level – it is activated with a red pull handle. A redundant alarm is positioned at eye level on the column near the entrance platform – it is activated by pushing the red button in. Leave the button pushed in during an actual emergency. Once either station is activated, an audible alarm will sound. Staff will respond immediately. If an alarm station is activated accidentally, disarm it immediately and notify Security. More specific information regarding the use of the diver alarm system will be provided during volunteer safety training.

The dive alarms are to be tested daily, first thing in the morning, after notifying Security of the test. This alerts Security that divers will be in the GOT. At the end of the day, Security must be notified that the divers are out of the water for the night.

Fire Alarm: If the fire alarm sounds or if there is an announcement of a building evacuation, proceed to the nearest fire exit stairway. Do not attempt to use the elevators.

Emergency Diver Recall Procedure: During a fire or other emergency, it is imperative that the divers be recalled to the surface so they can evacuate the building.

Underwater speaker system for the GOT.

You will see a white box and speaker on the shelf under the Guardian Full Face Mask communications box.

First – this is not a toy! This was very expensive system to get in place for us, but I feel the lack of a quality diver recall in the GOT mandated the investment.

This system is meant to be deployed in the event that divers must surface immediately due to fire alarms or other true emergency issues.

How this system works:

The speaker is tethered to a rope that is tied into place on a cleat beside the turtle box. Gently lower the speaker into the water.

Open the white box and turn on the radio unit. The power button is on the far right side of the radio unit.

The microphone is hanging inside the white box on the left.

Remove the microphone from the hook and depress the button on the side of the microphone to begin transmission to the divers.

Do not adjust the volume. It is set properly already and has been tested for clarity in all parts of the GOT with great audio recognition from the divers.

Keep your transmission simple. “ALL DIVERS PLEASE SURFACE IMMEDIATELY”

As the diver you are to ascend at a safe rate, but do not stop for a safety stop.

Please power down the unit and remove the speaker ASAP from the water once divers are surfacing. We don't want the fish or Caretta to eat the speaker.

As soon as the emergency has been cleared and we are safe to return, please rinse off the speaker with freshwater, towel dry it, and return it to its original location.

A few notes.

NO wet hands on this radio unit!!!!!!

No food or drink on that shelf by the communications box.

This sound really startles the fish. Not a good thing, but acceptable for these rare emergency recall needs.

If power goes out and the lights shut off, then wait a few seconds for emergency lighting to come on and then exit the water immediately.

For non-emergency signaling, you can still use something to bang on the ladder as an audio cue.

Daily Responsibilities

Although the daily dive schedule may change, the following is a general guideline to the typical daily activities of the volunteer dive team.

Morning Start up (8:00 AM)

Enter the building through the loading dock area with your key fob and ID badge. Once you are on the 3rd floor:

- Sign in on the computer by volunteer services to ensure you get credit for the day.
- Check the dry erase board by the disinfect station and in the dive locker for messages.
- Inspect and clean the 3 GOT windows from the public's side.
- Report to Food Prep. Check the message board in Food Prep for any changes in feeding protocol. Always check that you have adequate food for the day. If food has not been thawed for the GOT, contact the Dive Operations Staff or the DPIC.

Food Preparation

To avoid cross-contamination of other exhibits, **DO NOT ENTER FOOD PREP WITH A WETSUIT ON, WET OR DRY!**

While in the food preparation room, keep in mind that the entire animal care staff must use the same kitchen, and it can periodically become crowded. It is advisable to use one small section of the counter or pace your time in that area accordingly. Remember, any and all accidents should be reported to Guest Services as well as to the Dive Operations Staff. The knives in food prep are very sharp. Be careful!

A message board is located in the food prep room. Changes in the day's food quantity, menu, or any other relevant information may be found there or on the refrigerator door.

Cleanliness is important when working with raw food. All equipment must be cleaned thoroughly, using a liberal amount of disinfectant. If you have open cuts on your hands, you should use latex gloves. Hands should be thoroughly washed when finished preparing food. At the end of the day, feed buckets and utensils must be cleaned and returned to their storage space. Husbandry will ensure trash and any boxes are taken down to the receptacles on the loading dock at the end of the day.

Husbandry will provide the next day's food breakout for the GOT. The food chart for the GOT is posted on the middle door of the large food prep refrigerator; it should be consulted to prepare the correct portions. As previously mentioned, the message board may also have information relevant to the day's feeding plan. A variety of foods are used, including mackerel, squid, smelt, capelin, krill, gel food and pellet foods.

More specific information on preparing food will be covered during training. Divers will view a presentation on food prep during the Diver-in-Training certification.

GOT Backup Area Set-Up

- The Emergency Check Sheet must be filled out every morning prior to the first dive of the day. Items listed on the sheet include:
 - Test both dive emergency alarms (after notifying Security), and log the test on the clipboard near the surface alarm.
 - Test Emergency Recall System
 - Check Emergency Dive Gear and record cylinder pressures on the clipboard
 - Also check the following emergency equipment to insure it is available:
 - Stokes Litter Basket
 - First Aid Kit
 - AED
 - DAN Emergency Oxygen Kit
 - Radio
- Fill disinfectant and rinse buckets (five pumps of disinfectant are all that is needed).
- Check and top off footbaths throughout the GOT back-up area.
- Turn OFF Air Stone before Public Opening Hours (9:00am)

Animal Husbandry Records

It is imperative that the logbooks be kept detailed and current. The GOT Feeding Records are on the backside of the paper dive log for each day. This provides the Husbandry staff with important information regarding the animals in the GOT. Be alert to which animals are eating and which animals appear to have no appetite, and record at the end of the day. Alert the DIVE OPERATIONS STAFF or Husbandry immediately of any animal concerns for guidance. Do not attempt to net or remove an animal (dead or alive) from the GOT without direction from DIVE OPERATIONS STAFF or husbandry.

Cleaning Dive Gear

It is critical that all dive gear be disinfected properly to avoid contamination, not only to the GOT but also to other exhibits. Any personal dive gear that has been last used *ANYWHERE* other than the GOT *MUST BE DISINFECTED BEFORE YOU ENTER THE GOT*. All dive gear, including your personal gear, must also be disinfected at the end of the day. Return all Aquarium dive gear to the proper storage locations.

- Wetsuits and BCD's should soak in the disinfect bucket for at least 10 minutes to give the disinfectant time to penetrate hard-to-reach areas. It should then be rinsed in the freshwater rinse tank before being hung to dry.
- All BCD's should be rinsed inside and out, *DRAINED*, and hung to dry (filled with air) in the gear room. Remove any tools (brushes, trim weights, etc.) from the BCD pockets. Do not put food or sharp objects in the pockets of the BCD.
- Regulators **must** be properly capped before putting them into the freshwater rinse bucket. Regulators should be rinsed in freshwater, spray the inside of the regulator mouthpiece area with Birex, and allow to sit for 10 minutes. Regulator should then be rinsed again and hung to dry for the next day. If a regulator is dunked underwater with the dust cap off, tag it and immediately report it to the DIVE OPERATIONS STAFF or Husbandry. *DO NOT* pressurize the regulator, as this will send water to the pressure gauge.

- Guardian Full Face Masks should be rinsed in freshwater, spray the entire inside of the mask with Birex, and allow to sit for 10 minutes. GFFM should then be rinsed again and hung to dry for the next day. Once a mask has been dunked and the microphone gets wet it should thoroughly dry before being used again.
- Weights and fins are to be rinsed and returned to the appropriate place on the GOT wall.
- All broken dive gear (except cylinders) should be given directly to the DIVE OPERATIONS STAFF or the covering DPIC to be tagged and put on the **floor of the compressor room**. A problem with a cylinder, such as missing O-ring: tag tank and place in left slot in rack adjacent to the compressor.
- **Never try to repair any Aquarium gear on your own.**

Filling Scuba Tanks

Scuba tanks should be filled by the end of the day. **Regardless of how long you may have been filling tanks outside the Aquarium, only divers who have been trained and certified by the Aquarium under the PSI Hazmat/Fill Station Operator class may fill tanks. All divers will get this training when entering the program and every 3 years thereafter.** Never assume that your experience permits you to bypass Aquarium policy. Failure to adhere to Aquarium procedures can result in dismissal from the dive team. Never leave any tank standing freely. NO outside tanks may be filled with the Aquarium compressor.

Closing Duties

- Dump all disinfect and rinse buckets. Leave them upside down to drain, and squeegee the floor.
- Turn off and depressurize the regulator on the emergency dive gear by dive platform.
- Copy the dive information on the job log whiteboard into the paper dive log notebook and then into the AAUS dive log system on the computer in the hallway by the dive locker room. <http://sca.diveaaus.com>
- Fill and store all tanks.
- Clean and disinfect feeding buckets and return them to the food prep room.
- Clean and disinfect the food cart and return outside of food prep room. Do not take this cart into food prep to avoid possible cross-contamination issues.
- Hose down and squeegee the floor around the GOT, especially the area where feeding was done.
- Turn off lights, and lock all doors around the GOT backup area.
- Hose down the locker room and spray bleach solution on the floor. Squeegee dry.
- Alert Security that divers are out of the water for the day.
- Sign out on the computer by the volunteer services office.

Diving Procedures

There are typically four dives per day, at 9:30, 11:00, 1:30 and 3:00. The actual number may vary depending on available divers and task load. The dive shows are top priority.

Remember to use your professional dive skills at all times. When entering the water, use a seated entry. Giant strides are not permitted as they have the potential to startle the larger animals.

Proper buoyancy control is a must in the GOT. Use correct weight, especially in the shallow area where a near empty scuba tank will show its positive effects more so than in deep areas. Most divers add 5 lbs. to their normal saltwater neutral buoyancy weight.

In addition to shows and feeding, there are a number of preventative maintenance and custodial tasks that also must be completed while diving in the GOT. When a pair of divers hit the water, the first thing they should do is a visual check of the exhibit. Take time to look at all areas for dead or distressed animals. If any are seen, alert the DIVE OPERATIONS STAFF or a Husbandry staff member ASAP so we can determine what actions to take. Remove dead or injured fish only when directed by DIVE OPERATIONS STAFF or Husbandry. Make a note on the animal feed log.

All areas of the GOT should be inspected daily. An inspection is a good way to become familiar with some of the more secretive animals in the exhibit. Inspection of the cavern area will be done by a team leader or experienced aquarium diver. Entrance into overhead environments must be done in a close buddy system with one diver stationed in the entry observing the other.

Become familiar with the habits of certain fish and where they like to hide. This way, you may notice subtle changes that may indicate a problem. Take care when diving around the coral, as it is fragile. Although they are artificial, we need to be aware of the messages we are sending to the guests. If we are seen standing, kneeling, or resting on corals, we convey the false idea that this is proper dive practice out in the wild. Treat the artificial coral as you would on a reef dive. Pay close attention when diving/cleaning as you may find that over time, some protruding coral will become loose. Remove all broken coral from the exhibit.

Cleaning Dive – 9:30 AM

The first step during the cleaning dive is the general inspection of the tank and its occupants, as described above. Next, divers should inspect the skimmer screen located across from the dive platform for any debris that may be blocking flow. All sections of the skimmer guards should be intact. The skimmer should be checked after each dive.

Windows must be checked first thing every morning, and all algae removed with a white doodlebug pad. Do not use abrasive materials on the acrylic. Brushes are reserved for scrubbing corals, rockwork, floors and walls, and the scum line. Remember, tanks can seriously damage acrylic, be aware of your location when in cleaning around windows.

Vacuuming should take place during the first dive, and the hose should be removed from the water as soon as possible after completion. Be sure that the lower front window area is thoroughly cleaned; debris collects nightly in the lower left corner. Sometimes sweeping the floor by hand can be just as effective.

Do not leave any items (air/vacuum hoses, brushes, etc.) in the water upon exiting the exhibit.

Guardian FFM Shows

Dive shows are an important part of the volunteer dive program. Wearing a Guardian Full Face Mask (GFFM) and hovering in the main window, a diver can both hear and speak to the audience from underwater. By including a diver as part of the presentation, we can dramatically increase the interest and impact of our education program. Working with the educator on the “dry side,” a properly trained diver can be the highlight of many guests’ visits.

New divers will view a presentation on the GFFM mask during the Diver-in-Training certification, and will then be trained in the proper use and sanitation of the communication system/ GFFM mask, both as a tender and as a presenter. No diver may use this equipment without being checked out by the Dive Operations Staff. You may have prior experience in the use of a Full Face Mask, such as AGA or Guardian mask, but you are required to follow SCA policy and cannot skip the checkout.

Show Schedule

Shows must begin promptly, as we promote these times throughout the SCA

Monday – Sunday

11:00 and 3:00 (Low Season)

11:00, 1:30, and 3:00 (High Season)

**This dive typically lasts about 30 minutes.*

Safety Diver

Every dive will have one diver assigned the task of Safety Diver. This diver should be the first diver in the water and last diver out for each dive. Their role is to be the in-water supervisor monitoring the other divers and the animal collection. The safety diver should hover in the middle of the tank and constantly be looking around. The safety diver will carry a signally device to easily notify the other divers of potential hazards. More training on the task of safety diver will occur in the Diver-in-Training certification.

Standby Diver

Every scuba dive will have one diver assigned the task of Standby Diver. This diver is topside for the entirety of the dive and is ready/capable to respond in an emergency. Standby diver is logged as if they were in the water. Standby diver helps get the other divers in and out of the water, ensures the dry erase board is accurate, and reviews the pre and post dive checklist.

Surface Supplied Air/Surface Tending

The GOT is the main focus of volunteer divers. However, there will be times when divers are asked to help in some of the smaller exhibits, including Carolina Seas, Rocky Reef, Snapper Banks, Blackfish Banks, Salt Marsh, Sea Turtle, and Shark Shallows. These exhibits are too small for traditional scuba, so surface supplied air diving is utilized. There must always be a surface tender working with the diver and either a second diver in the water or a standby diver.

Surface tenders are required to remain topside the entire time the diver is in the water. They are responsible for monitoring the diver's air supply and voice communications. Divers must notify Security when they enter and leave these exhibits.

Divers must fill out the dive log and emergency check sheet located on the dive cart and must enter this info at the end of the day into their personal electronic dive log.

Divers may not use dive gear in more than one exhibit per day. Wetsuits and accessories will be provided for divers entering other exhibits.

Divers will view a presentation on Surface Supplied Air Tending and Diving Procedures during the Diver-in-Training certification.

Shark Procedure

Please remain aware of the sharks in the GOT at all times. We are in fact in 'their space' and occasionally one of them may bump into a diver. You are strongly encouraged to respect the sharks' territories and go out of your way to avoid any encounters with them.

Should one of the sharks come nearby simply stop and observe the animal's behavior. If the shark swims away naturally, continue your dive as normal. If aggressive behavior is displayed, allow the animal to swim away, exit the water, and alert the Dive Operations Staff or DPIC. No physical contact should be made unless you feel an attack is imminent. Report any unusual shark behavior immediately and always be ready to exit the water if needed.

Examples of Unusual Shark Behavior

- Bumping
- Arched Back
- Pectoral fins down
- Tight s-curve swimming
- Erratic change in swimming behavior

SCA Certification Levels

SCA Diver Tryout *[This is intended for the new diver coming into the program]*

- South Carolina Aquarium Orientation
- Recreational Diver Certification (Advanced or equivalent)
- 18 Years of Age or older
- Interview with DIVE OPERATIONS STAFF
- Written Exam #1
- Fill Station Operation / Cylinder Hazmat Certification
- CPR/First Aid and O2 Provider certifications
- Medical Approval
- Pool Skill Evaluation
 - Swim Skills (See page 9 of this manual for details)
 - Checkout Dive #1 (See page 9 of this manual for details)
- 2x Dry Day Observation
- GOT Exhibit Dive Day

SCA Diver-in-Training Certification Classes

- Exhibit Diving Certification
- Exhibit Cleaning Certification
- Feeding Certification
- Dive Computer
- Reserve Air Supply System (RASS)
- Safety Diver
- Fish ID Training
- AAUS History Review
- Guardian FFM Certification
- Emergency Response Training
- Surface Supplied Diving
- SCA/AAUS Manual Review
- Physics Review
- Physiology Review
- Team Leader Training
- Nitrox Certification

Application to DIVE OPERATIONS STAFF and Completed Training Log

Written Exam #2

SCA Aquarium Diver Certification

- Scientific Diver-in-Training Certification Curriculum
- Minimum cumulative time of 100 hours volunteer service and 30 dives at SCA
- Application to DIVE OPERATIONS STAFF
- Full review of SCA dive policy manual.

This is the minimum required for reciprocity to other aquarium and offshore dive trips

Minimum \$100,000 supplemental dive insurance required for offshore trips.

Nitrox required for offshore trips

SCA/AAUS Scientific Diver (30', 60', 100', 130' depth certifications)

Scientific Aquarium Diver Certification

30' is the initial level acquired entering into this certification

60' certification requires 12 open water dives with a qualified AAUS Scientific Diver for the desired depth range.

100' certifications require 4 dives at each level with a qualified AAUS Scientific Diver for the desired depth range.

130' certifications require 4 dives at each level with a qualified AAUS Scientific Diver for the desired depth range.

Zoonosis Information Sheet

Zoonosis is defined as a disease carried by a vertebrate animal and contractible by humans.

It has long been known that some animals carry diseases that humans can contract. Direct contact, fomites or aerosols may transfer these diseases. Human infection can occur by ingestion, inhalation, contact with mucus membranes or open wounds. The risk of infection depends on several factors. Some of these are prevalence in the population, route of transmission and vulnerability of the victim. It is our intent to limit exposure and risk of employees, volunteers and guests.

The SCA assumes that any animal or tank can carry zoonotic diseases. Therefore anytime a person comes in direct contact with the animal population (i.e. the animal itself, tank water, and fecal matter) it is advisable that they wash their hands as soon as practical and especially before eating or drinking. It is the responsibility of employees to advise guests that have had direct contact with either animal or fecal material to wash immediately, and to cleanup any animal fecal material as soon as practical.

Follow these recommendations to limit or remove zoonosis risk:

- Wash hands prior to and after contact with any animal or animal related material (feed pans, fecal material, and bedding).
- Cuts and abrasions should be covered with a waterproof covering. Skin wounds should not come into contact with possibly infectious water until a scab has formed (3 days average).
- Do not eat or drink in animal areas
- Use protective clothing where applicable (gloves, boots, eye protection)
- Dead or diseased animals must be handled with special caution, and removed promptly for necropsy or safe disposal.
- Use caution if using immunosuppressant drugs or and depressed immune system. If a person has any concerns please contact your physician.
- Staff illnesses should be reported to the supervisor, especially if it (or its medications) is known to suppress human immune function.

Special recommendations for SCUBA divers at SCA:

- Follow all of the above recommendations
- You should not dive until any skin wound has developed a scab (3 days average). Covering scabs with skin glue, Vaseline, or antibiotic ointment can provide additional protection by forming a water resistant barrier.

- Shower after each dive using soap.
- Because wound penetration is the primary cause of entry for the aquatic zoonosis of concern, contracting zoonosis via ingestion of water or through the eyes is not likely. Atypical, aquatic mycobacteria are not known to cause gastrointestinal infections because the temperature in your GI tract is too warm. Infection in the eyes is unlikely because the eyes are protected by several powerful antibacterial enzymes. Wounds on the extremities/skin are the major concern.
- Don't dive when you are immune compromised or have an open wound, no matter what size. If you HAVE to dive with a day 1-2 old scratch, protect the incision with something like antibiotic gel or Vaseline.

Known animals that carry zoonotic diseases and the associated symptoms:

Note: this list is not intended to be a complete list of zoonotic diseases, but a reference of those most likely to be encountered.

Otters - It is the practice of the SCA to not come in direct contact with otters unless in an emergency situation. If a bite should occur qualified medical personnel should examine the keeper immediately.

Rabies – rabies vaccination are part of the animals' preventative medicine plan; initial symptoms are usually pain, tingling, or itching shooting from the bite site (or site of virus entry).

“*Ringworm*” or dermatomycosis is a fungal infection that is characterized by raised, itchy, ring like lesions on the skin.

The following bacteria can be transmitted via otter feces and cause common symptoms of diarrhea, flatulence, stomach cramps, and nausea (among others):

Giarda, *Clostridium* spp., *Salmonella* spp., and *E coli*.

Birds - Some birds have been known to carry zoonotic diseases. All of these can be stopped or eliminated by washing hands and face immediately after contact with the animal or fecal material.

There are several bacterial agents that cause infection:

Chlamydia; characterized by headache, joint and muscle pain, swollen lymph glands, influenza like symptoms

Salmonella; watery diarrhea, fever, and dehydration

Pasteurella multocida; wound infection following peck or scratch

Fungal agents people are likely to come in contact with are:

Aspergillosis; human risk is not directly from the infected bird but from the contaminated environment; most likely to infect immune-compromised animals and people; characterized by difficulty breathing and flu like symptoms

Protozoal infections that are possible are:

Giardia; watery diarrhea

Cryptosporidia; diarrhea may also see vomiting and headaches

Reptiles - These animals are known to carry and pass several diseases to humans. Anyone coming in contact with these animals should wash hands and face immediately. Occasional contact between aquarium visitors and program animals is possible. All animal handlers are responsible for providing hand sanitizer to visitors at the time of contact and for informing the visitor of the threat of Zoonosis. They also advise that anyone that comes in contact with animals wash prior to eating or drinking. Bacterial infections are known to be:

Salmonella; assume all reptiles are carriers. Diarrhea and dehydration.

Campylobacter; diarrhea

Mycobacterium sp. (atypical mycobacterium) often infection through cuts and or abrasions, that spreads through the lymph system, most notable symptom are nodules at the infection site; see additional mycobacterium information below

Fish - These animals are not known to carry many zoonotic diseases. In an effort to be consistent and safe, the employees should suggest to guests that come in contact with an animal to wash hands prior to intake of food or drink. Bacterial diseases however are known to infect those who frequently handle fish and some immune-suppressed individuals:

Mycobacterium sp. (atypical mycobacterium) infection can occur through cuts or abrasions; most notable symptom are nodules at the infection site; see additional mycobacterium information below

Erysipelothrix rhusiopathiae is a bacteria found in fish slime. This typical marine mammal pathogen can cause severe vasculitis in amphibians, reptiles, birds, and mammals when it enters via a wound.

Vibrio, *Proteus*, *Aeromonas*, and *Pseudomonas* are common water bacteria that can cause infection through wound penetration, especially when the immune system is compromised.

Vibrio - nausea, stomach pain, diarrhea, vomiting

Proteus – urethritis, cystitis, prostatitis, or pyelonephritis

Aeromonas - gastroenteritis

Pseudomonas spp. - fever, chills, and the production of purulent matter in infected wounds; urinary tract infections

Additional Information on Atypical Mycobacteria

What are *Mycobacteria*?

Mycobacteria is the genus name for a type of slowly growing bacteria that may cause disease in animals and people (i.e. zoonotic). The genus can be separated into two groups. Many people are familiar with bacteria of the first group, *Mycobacteria tuberculosis* and *M. bovis*, that can cause fatal respiratory disease in humans. These bacteria are not a concern at SCA and are not the focus of this discussion. Bacteria of the second group, atypical mycobacteria, are slower growing, less infectious, and normally inhabit moist soils and aquatic habitats. They cause opportunistic skin infections in people and they are the focus of this discussion. Infection with atypical mycobacteria occurs rarely from contact with swimming pools,

aquariums, or fish. These bacteria do not grow at normal body temperature, so the infections they cause usually remain localized to the cooler skin surface.

Human infections by atypical mycobacteria are rare.

However, people who have breaks in the skin such as cuts and scrapes may be at risk

- when in contact with water from an aquarium or fish tank, when handling, cleaning, or processing fish, or
- while swimming or working in fresh or salt water.

One form of the infection, known as “swimming pool granuloma”, can be due to the ineffective chlorination of swimming pools. In the United States, most human infections due to atypical mycobacteriosis had been associated with exposures to fish tanks.

What are the symptoms in people?

When atypical mycobacteria infect the skin, they cause localized microscopic nodules to form. These nodules are called granulomas. They occur at sites of skin trauma where there are scratches, cuts, etc.

The granulomas usually appear within 2-3 weeks of exposure. Some reported cases have developed 2 to 4 months or more after exposure to atypical mycobacteria because of the very slow-growing nature of these bacteria.

The most frequent sign is a slowly developing nodule (raised bump) at the site the bacteria entered the body. Frequently, the nodule is on the hand or upper arm. Later the nodule can become an enlarging sore (an ulcer). Swelling of nearby lymph nodes occurs. These lesions can spontaneously heal in several months. This infection can also involve the joints (septic arthritis) and bones (osteomyelitis).

A health care provider should be consulted if a skin nodule or reddened sore (ulcer) develops following direct skin contact with fresh or salt water or after handling or processing fish.

For people with compromised immune systems, atypical mycobacterial infection can be especially serious and involve disseminated (widespread) disease. If an infection is suspected under such circumstances, a health care provider should be promptly consulted.

How is this infection treated?

Anti-tuberculosis drugs (antibiotics) speed healing. These drugs usually need to be taken for 3-6 months. Surgical debridement of tissue may be necessary as some infections appear resistant to treatment.

What are the symptoms in animals?

Mycobacteriosis (infection by Mycobacteria) in fish is predominantly a visceral disease, infecting organs such as the spleen, liver, and kidneys. Internal signs of the disease typically include small grayish white nodules called granulomas in these organs. A small percentage of the infected fish also exhibit unsightly shallow, rough-surfaced, reddened, or darkly

pigmented skin ulcers. Loss of scales is common in these ulcers. Infected fish sometimes exhibit significant weight loss.

It is important to note that these symptoms may be caused by agents other than Mycobacteria as well, such as *Nocardia* and *Erysipelothrix rhusiopathiae*.

How is it diagnosed?

Diagnosis of mycobacteriosis depends on clinical signs, culture, histological signs and identification of the bacterial pathogen.

How can I protect myself?

Avoid fresh or salt water activities if there are open cuts, scrapes, or sores on your skin, especially in bodies of water where this bacterium is known to exist. Skin wounds should not come into contact with possibly infectious water until a scab has formed (3 days average).

If you have a weakened immune system, you can reduce the risk of infection by carefully covering cuts, scrapes, or sores during fresh or salt water activities and while cleaning fish tanks or handling, cleaning or processing fish.

Wear heavy gloves (leather or heavy cotton) while cleaning or processing fish, especially fish with sharp spines that may cause cuts, scratches, or sores to the hands and skin. Wash hands thoroughly with soap and water after fish processing or use a waterless cleanser.

Wear waterproof gloves while cleaning home aquariums or fish tanks. Wash hands and forearms thoroughly with soap and running water after cleaning the tank, even if gloves were worn.

How can I protect myself at SCA?

- Follow the recommendations listed above:
 - Wash hands prior to and after contact with any animal or animal related material (feed pans, fecal material, and bedding).
 - Cuts and abrasions should be covered with a waterproof covering.
 - Do not eat or drink in animal areas
 - Use protective clothing where applicable (gloves, boots, eye protection)
 - Dead or diseased animals must be handled with special caution, and removed promptly for necropsy or safe disposal.
 - Use caution if using immunosuppressant drugs or and depressed immune system. If a person has any concerns please contact your physician.
 - Staff illnesses should be reported to the supervisor, especially if it (or its medications) is known to suppress human immune function.
- Practice good common sense hygiene.
- Use disinfect and rinse buckets regularly.
- Be aware of any cuts or scratches you may have and protect yourself appropriately.
- Stay aware of the mycobacterium infection status of SCA systems.

How can I protect myself while SCUBA diving at SCA?

- Follow the recommendations listed above
- Do not dive until any skin wound has developed a scab (3 days average). Covering scabs with skin glue, Vaseline, or antibiotic ointment can provide additional protection by forming a water resistant barrier.
- Shower after each dive using soap.
- If using immunosuppressant drugs or have a depressed immune system consult a physician before diving.

Atypical mycobacterial infection is not spread from person to person.

Atypical mycobacteria information gathered from the following websites:
http://www.medicinenet.com/mycobacterium_marinum/article.htm
www.dnr.state.md.us/fisheries/oxford/research/fwh/stripedbass/factsheet.pdf
<http://www.vims.edu/myco/pdfs/FAQ.pdf>

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SCA Diver Training Log

Diver Name:

	<i>DSO or Designee Signature</i>	<i>Diver Signature</i>	<i>Date</i>
Prerequisites During Application Process			
Written Exam #1	_____	_____	_____
Assumption of Risk and Liability Release	_____	_____	_____
Medical Acknowledgement	_____	_____	_____
Dive Certification Cards	_____	_____	_____
CPR/AED/O2/First Aid Certification	_____	_____	_____
Fill Station Operation/Cylinder Handling	_____	_____	_____
Dive Medical	_____	_____	_____
Swim and Dive skill evaluation	_____	_____	_____
 Day 1			
Dry Side Observation Day #1	_____	_____	_____
Volunteer Diver Policy Manual	_____	_____	_____
Exhibit Diving Presentation & Quiz	_____	_____	_____
Feeding Presentation & Quiz	_____	_____	_____
 Day 2			
Dry Side Observation Day #2	_____	_____	_____
RASS Presentation & Quiz	_____	_____	_____
Computer Presentation & Quiz	_____	_____	_____
 Day 3			
Dive #1: Computer, RASS #1, & CESA	_____	_____	_____
Dive #2: Computer & RASS w/ Ascent	_____	_____	_____
Dive #3: Exhibit Familiarization	_____	_____	_____
 Day 4			
Exhibit Cleaning Presentation & Quiz	_____	_____	_____
Exhibit Cleaning Dive #1	_____	_____	_____
Exhibit Cleaning Dive #2	_____	_____	_____
 Day 5			
Safety Diver Presentation & Quiz	_____	_____	_____
Safety Diver Evaluation	_____	_____	_____
 Day 6			
AAUS History Presentation & Quiz	_____	_____	_____
 Day 7			
Fish ID Presentations and Quiz	_____	_____	_____
 Day 8			
Guardian FFM Presentation & Quiz	_____	_____	_____
Guardian FFM Show Observation	_____	_____	_____

SCA Diver Training Log

Diver Name:

	<i>DSO or Designee Signature</i>	<i>Diver Signature</i>	<i>Date</i>
Day 9			
Guardian FFM Training Dive #1	_____	_____	_____
Guardian FFM Training Dive #2	_____	_____	_____
Day 10			
Guardian FFM Show	_____	_____	_____
Day 11			
Surface Supplied Presentation & Quiz	_____	_____	_____
Tending Surface Supplied Dive	_____	_____	_____
Day 12			
Surface Supplied Dive	_____	_____	_____
Day 13			
Physics Presentations and Quiz	_____	_____	_____
Day 14			
Physiology Presentations and Quiz	_____	_____	_____
Day 15			
Team Leader Presentations and Quiz	_____	_____	_____
Day 16			
SCA/AAUS Dive Manual Review and Quiz	_____	_____	_____
Day 17			
Written Exam #2	_____	_____	_____
Day 18			
Nitrox Presentations and Quiz	_____	_____	_____
Day 19			
Open Ocean Presentations and Quiz	_____	_____	_____

Successful Completion of this training and approval by DSO is required before diver can start to apply for the Aquarium Scientific Diver Certification.

Statement of Understanding

I have read the South Carolina Aquarium Volunteer Diver Policy Manual 2016. I understand the responsibilities of the position and will follow them to the best of my ability. I also understand the Goals and Mission of the Aquarium. I understand that while volunteering I represent the SCA while on site or wearing the SCA uniform.

Print your name

Signature

DATE