Workshop Abstracts - 2020

Life Support

BAWL Commissioning & Startup (Wet)

This unique workshop is designed for newcomers to the LSS industry. The attendees will get hands-on experience with all the exciting facets of the initial setup, startup, and commissioning of the Big Automated Water Loop. This workshop will provide a comprehensive system startup experience including, but not limited to: Flange assembly, solvent cement welding techniques, pipe fusion practices, protein skimmer assembly and tuning, introduction to automation, problem solving and troubleshooting. During the BAWL build-out this workshop will cover a variety of topics including:

- Flange Assembly
- Cement Welding
- Fusion Welding
- Commissioning
- System Start-up
- Pump and Motor Rebuild
- Water Quality
- System Controls

10 Hour OSHA General Industry Course - Stiles Inc.

Designed by OSHA to provide an awareness training on topics such as: Introduction to OSHA, Walking and Working Surfaces, Electrical, Hazard Communication, Personal Protective Equipment. Exit Routes, Emergency Action Plans, Fire Prevention, Material Handling, Hazardous Material (Flammables and Combustibles), and Permit Required Confined Space Entry. People completing both days of training will be mailed an OSHA 10 General Industry Card distributed by the Department of Labor.

CPO Certification Blended Training* – Joel Yankie, Columbus Zoo & Aquarium and Zoombezi Bay Waterpark

The CPO® certification program includes pool and spa chemistry, testing, treatment, filtration, maintenance, automatic feeding equipment, and government requirements. Participants will achieve a better understanding of the operator's role in pool care, management, and risk reduction. Many state and local health departments accept the CPO® certification program. This two part course begins with prior completion (before the AALSO Symposium) of an online curriculum that follows the 18 chapters in the NSPF® Pool & Spa Operator™ Handbook, which is also provided. Students must bring a Pool Operator Primer™ Record of Completion to the classroom on Thursday and successfully complete the Pool Operator Fusion™ class to obtain a CPO® Certification. The CPO® certification program requires an in class open book written examination. Upon successful completion of this course and exam, participants will receive CPO® certification from NSPF in the mail and is valid for five years.

ASME B31.3 Solvent Cementing Training for PVC & CPVC – IPS Workshop Supplies provided by LASCO Fittings, Inc.

This workshop will cover the basics of solvent welding PVC pipe, causes of failed joints and cement & primer selection. There are two parts to this class. There will be a Powerpoint Presentation in a classroom and a hands on class where each student will make a sample under our supervision. The sample will then be tested in our facility. If the sample passes the hydrostatic testing, the student will be issued an ASME B31.3 Bonder qualification card stating that they have successfully completed the training.

Bio-Filtration Workshop- Longhorn Organics (Wet)

To provide hands on learning of various types of bio-filtration systems commonly used in the aquatics industry. Demonstrate functionality, maintenance, and testing procedures best practices.

Variable Frequency Drives; Troubleshooting- ABB (Wet)

Variable Frequency Drives (VFDs) are common in most municipal water systems. This presentation will cover basic problems and nuisance trips which may be encountered with VFDs. Safety comments and wiring tips will be covered as well.
Attendees should gain:

- An awareness of safety considerations.
- Grounding considerations.
- Common approach questions for resolutions.
- Typical fault and nuisance fault message utilized for VFDs.
- An awareness that VFDs are self-protecting devices.

The ABC's of VFD's – ABB (Dry)

Although Variable Frequency Drives (VFDs) are common in water and wastewater treatment plants for collection and distribution systems, the value they provide and how to properly select and use them are often not fully understood. This presentation will demystify VFDs, providing a better understanding as to where and why you would use them.
Attendees will leave with the ability to:

- Be aware of safety considerations.
- Identify applications that can benefit from VFDs.
- Understand the inherent value they provide.
- Recognize what needs to be considered to appropriately size and select VFDs.
- Be aware of proper installation considerations for a successful solution.

ORP Maintenance & Calibration, and available Flow Measurement Technologies as well as proper in-line installation of salinity, temp, & Dissolved Oxygen- GF Signet (Wet)

For ORP - Course will be focused on proper removal from live line, cleaning, conditioning, recommended frequency & calibration of ORP systems. For Flow- Will discuss available flow technologies Paddlewheel (mechanical) , Magnetic (no moving parts), and ultrasonic (non-intrusive). Going over features advantages and benefits of each. For the balance we will cover proper installation of salinity (avoiding dead spaces and bubbles) , Temp sensors in larger lines and options for mounting Dissolved Oxygen sensors.

Butterfly, Ball and Check Valve Workshop – Asahi America (Dry)

Hands on disassembly and troubleshooting of butterfly valves, ball valves and check valves (ball and swing/flapper). Parts identification, standard features, recommended spare parts, installation and setting of Gear-Operators, and complete tear down and rebuilding valves. How to properly diagnose failure conditions, symptoms of failures. Review of flow direction requirements where applicable along with some light actuation issues and troubleshooting. Workshop attendees will have the opportunity to cycle through each of the manufactures above and work on a series of valves.

Laser Alignment of Pump and Motor Coupling – CECO Environmental – Fybroc Brand (Wet)

This presentation and alignment simulation will provide a brief tutorial of shaft alignment identifying the various types of misalignment, differences between shaft and coupling alignment and descriptions of the various methods of alignment including straight edge, dial indicator and laser. Utilizing a pump/motor coupling simulator the various methods of shaft alignment will be demonstrated highlighting the issues not identified by straight edge and/or dial indicator measurements. Finally, the laser alignment tool will be used to illustrate the condition of a motor “soft foot.”

High Rate Sand Filter Training - Evoqua- Neptune-Benson) & Dryden Aqua (Wet)

The Hardware: The Filter
A general introduction of the High Rate Sand Filter; how it works, and a brief explanation of the parts of the filter. A Discussion and demonstration about filter operation and automation, different kinds of valves and valve sequencing, how to operate a filter manually when the automated controller fails.
The Software: The Media
Different types of media available. Different media for different purposes. Mixed media, media grading and quantities. The importance of filter design to media performance. The advantages of deep bed filtration and the influence of filtration rate on performance of different media. A simple demonstration of the differences between 2 media.A discussion and demonstration about filter backwashing; why we do it, when to do it, and how often. The importance of backwash velocity and bed expansion in backwash.

Regenerative Media Filter Training - Neptune-Benson (Wet)

A general introduction to the Regenerative Media Filter; how it works, and a brief explanation of the parts of the filter. A discussion on filter rate and precoat rates, what a “bump” cycle is and why it's done, what to look for in a good coating versus a bad coating of media on filter elements, differences between Perlite and Diatomaceous Earth media. A discussion and demonstration on a drain and rinse procedure, loading new media, performing a “bump”, performing a precoat cycle, and observing system valve cycling and adjustment to the program, air sparging, RMF controller programming for “bump” schedule, “bump” block, fireman connections, Variable Frequency Drive connections, and UV lock outs. Discussion on performing periodic maintenance; valve adjustment, bump assembly maintenance, tube wash and chemical cleaning, and controller software upgrades.

Protein Fractionator Technologies, Installation, Maintenance – RK2 Systems, Inc.(Wet)

Workshop designed to provide overview of protein fractionator technologies, highlighting the various benefits and limitations associated with each process. In addition to having participants learn assembly and cleaning protocols, we will cover how ozone works in conjunction with protein fractionation and close out the session with the group working through various troubleshooting scenarios in real time.

UV Sterilizer Maintenance – RK2 (Wet)

Hands-on workshop where participants will remove, clean and replace quartz sleeves. Participants will learn and physically replace O-ring seals, contacts and bulbs on a UV sterilizer and will learn about life expectancy of various bulbs along with recommended frequency of maintenance.

Maintaining Larger Pumps – CECO Environmental – Fybroc Brand (Wet)

This workshop will train and provide the attendees with the opportunity to perform the typical maintenance/repairs required on large non-metallic pumps. Subjects covered will include the various types of pump lubrication, changing pump oil (how much and how often), setting and/or replacing mechanical seals, axial adjustment of impellers, methods for removing threaded impellers, removal and/or replacement of INPRO shaft seals and finally a brief discussion and presentation of centrifugal pump cavitation.

Alternative LSS Piping– Asahi America (Wet)

We are all familiar with PVC piping used in most of our LSS Systems. We will discuss the benefits of other materials, such as HDPE and Polypropylene and how they can benefit LSS Systems. These piping systems are installed with thermal fusion. This method of installation requires only a very short cool-down period, not the long curing process that we all have skipped to get the system up and running. Each attendee will conduct a thermal socket, side saddle or butt fusion weld.

Acrylic Scratch Removal – EisenShine (Dry)

Learn how to remove scratches and restore clarity to acrylic enclosures. Hands-on experience removing scratches from acrylic on wet or dry surfaces by hand sanding, and polishing. Discussion of acrylic properties, the aging process, and tips for how to extend the useful life of all acrylic enclosures.

Ozone System Design and Integration – Satchell and Associates, Ozone Water Systems (Dry)

Participants in this class will be given a presentation on the key components that make up an ozone system, engineering factors that are considered when selecting various components, different ways of contacting ozone with water and various air prep systems.

Ozone System Training and Maintenance –Ozone Water Systems (Wet)

Participants in this class will be shown a running ozone system. There we will cover ozone generation with a demonstration of all of the components of an ozone system and the integrated safeties. This includes oxygen, ambient ozone monitors, ozone destruct, backflow prevention, e-stop, pump control, ORP, dew point and more. After presenting the ozone system as a whole we will focus on Oxygen Concentrator PM Service, Ozone Generator tuning and PM service, and Ozone Destruct PM service.

Proper Calibration & Maintenance of DO, pH & Conductivity Sensors - YSI (Dry)

This workshop will go over the proper way to calibrate the parameter DO, pH, ORP and Conductivity. It will include hands on calibration with the proper worksheet and information needed for calibration records. This will also go over when it is recommended to calibrate and what standards to use for your application.

Acrylic Scratch Removal – American Sealants, Inc. ASI (Dry)

Workshop attendees will be instructed on proper techniques for performing preventative maintenance tasks on acrylic surfaces, assessing and properly identifying damage to acrylic surfaces such as crazing, minor scratch identification and major scratch identification. Workshop attendees will be taught the techniques of minor scratch removal and have the opportunity to remove minor scratches from an acrylic tank.

Butterfly valve repair/disassembly/reassembly - Hayward (Dry)

The workshops will focus on basic butterfly valve installation, and will include hands-on training to remove and/or replace the valve liner, shaft seals, shaft and disc, and the re-assembly of same. The program will also discuss different valve/liner materials and when (or not) to use them.

Operation and Maintenance of Automated Chemical Controllers & Chemical Feed Pumps- ProMinent Fluid Controls (Wet)

The purpose of this workshop is to cover basic operation and maintenance of automated chemical controllers and chemical feed pumps. Attendees will learn how both diaphragm and peristaltic pumps work, their basic set up and maintenance. They will also get an overview of how automated chemical feeders interact with chemical feed pumps, sensor maintenance basics and how to configure the chemical control system for the best and safest operation possible. Attendees will leave the class with a solid understanding of chemical feed and control best practices including: proper set up and maintenance; how to maximize efficiencies, minimize downtime, and increase overall safety around this equipment.

Operation of Actuated Valves for Strainer and Filtration - Hayward (Wet)

Illustrating the benefits of automating systems; highlights of actuation maintenance and configuration, and basic operation of basket strainers and bag filters. The skid based system will contain a variety of products including valves, filtration, strainers, actuation, and control products for an operational education experience.

Small Pump Rebuild – MDM Inc (Wet)

Many people are unaware that small pumps can be rebuilt much in the same respects as their larger "cousins". Workshop attendees will have the opportunity to cycle through each of the above manufacturers and completely rebuild these pumps from impellers and shafts, to seals and even changing motor's.

Pump Sizing – MDM Inc (Dry)

A focus on all moving parts from mechanical seals and impellers to motor bearings and shafts, you'll gain the knowledge and skill set required to add value by keeping your pump systems functional while reducing downtime. Additional discussions on proper installation, VFD interface, duty point sizing, and optimal curve placement to duty-point via motor rpm control (turn-down or ramp-up) will be provided.

Ozone Contact Workshop- International O_3 (Wet)

Conduct hands on training on the following:
- Balancing of mazzei injector using a clear ozone contact vessel, injector with inlet, outlet and ozone line pressure gages, and ozone generating unit.
- Demonstration of gas turbulence and contact in a pressurized ozone contact vessel.
- Proper contact balancing to avoid gas carryover will also be part of the workshop.
- Proper ozone generator back pressure and balancing.
- Discussion of attendee system challenges.

"SUMP-n is going on here" - MRC America (Dry)

This workshop will be geared toward facilities looking to get the most out of their current and future sump designs and layouts. Multiple styles of sumps will be showcased featuring such innovations as micron filtration, drum & roller filter attachments, fluidized media chamber incorporation, refugiums, integrated UV & heat exchanger modules, fractionator holding, and internal/external pump configuration opportunities. Points of discussion will be:

a. Proper material selection (samples of materials available)
b. Features/benefits of each type of filtration component/section
c. Selecting the optimum layout within a sump for maximum benefit
d. Gauging the sump size for the system you are designing/refurbing etc.
e. Basic evaluation/selection of types of biological and chemical filtration

Acrylic bonding- MRC America (Dry)

This workshop will cover acrylic bonding techniques and fundamentals. Attendees will be instructed on the entire process of bonding: material preparation, preparing and applying the epoxy, and finishing. **Please Note:**Due to the caustic smell of the bonding process, anyone highly sensitive to smells or those with medical conditions should consult a doctor before attending this workshop.

LSS Troubleshooting and Control Theory – RCK Controls

Operators will connect to a simulated LSS to learn programming concepts and standard troubleshooting techniques in LSS automation. Attendees will program their own filter simulation and diagnose issues along the way to get their process running.

Automated Control Systems Workshop – RCK Controls (BAWL Startup & Commissioning)

This workshop will run throughout the day as in informal discussion/observation and will not be a slot in which an attendee can register for. The intention is to provide an opportunity for an attendee to interact with the controls end of the BAWL as you finish a workshop or are between activities. The automation supports many of the actual workshops so there is usually something going on. Folks from RCK and ABB will be on hand to provide an overview of how an Automated Controls System (ACS) can help save time, energy consumption, reduce mechanical stress and provide different types of alarms for times when the LSS is not functioning within parameters. B.A.W.L 2020 will be run through a control system and attendees can witness live feedback from various points throughout the system including flow, pressure and level. The loop pumps will all be run off VFD and the folks from ABB will be on hand to discuss soft starting pumps, control through a VFD and maintenance items on a VFD.**Please Note: This is an Informal Workshop**

Airsep & Plasma Block Ozone Generator Maintenance Troubleshooting and Repair- International Ozone (Dry)

Conduct hands on training on the following:
• Routine service procedures on self-contained Airsep units.
• Troubleshooting of low oxygen levels from self-contained Airsep units.
• Troubleshooting of oxygen flow swings from self-contained Airsep units.
• Disassembly and cleaning of plasma blocks, YES you can do this yourself.
• Discussion of attendee system challenges.

Basic Drum Filter Maintenance - Integrated Aqua Systems, Inc.(Wet)

Integrated Aqua Systems, Inc. is offering a hands-on workshop on the operation and maintenance of gear wheel driven drum filters using a HEX drum filter installed and operational on the BAWL. Attendees will receive basic instruction on the theory of operation, key parts identification, backwash sequence and proper start-up of a drum filter. Practical section will include basic maintenance tasks required to operate and maintain drum filters to their design specifications including panel maintenance, lubrication, basic controls set up, troubleshooting.

Plate Heat Exchanger Preventative Maintenance – Delta Hydronics and Aqua Logic (Wet)

Hands-on discussion of plate heat exchanger components, basic design and general maintenance practices. Workshop will cover the principals of equipment sizing and aquatic application considerations. Workshop attendees will break down a small plate and frame heat exchanger, remove the plates, change the gaskets and reassemble the heat exchanger.

Advanced Drum Filter Design Considerations & Maintenance - Integrated Aqua Systems, Inc.(Wet)

Integrated Aqua Systems, Inc. is offering a class with instruction on design considerations, proper selection, application and maintenance of gear wheel driven drum filters using a HEX filter installed and operational on the BAWL as a working example. In addition to a brief overview of basic drum filter operation and maintenance, attendees will receive an overview of different drum filter types, control systems, options and design applications. Practical section will include basic controller setup and programming required to operate and maintain drum filters to their design specifications.

Blueprint Reading - Satchell Engineering & Associates (Dry)

Learning to read blueprints is an essential skill for designers, contractors, engineers, operators and building owners. In this lecture and hands-on class, you will learn the vocabulary and language of blueprints. Topics covered include drawing scales, P&ID's, plan, elevation and section drawings, architectural symbols and legends. This course will help you understand how a set of blueprint drawings are put together and how to read them.

Thermoplastic Materials for Compressed Air Applications - IPEX (Dry)

This workshop will discuss various thermoplastic materials that are suitable and safe for use in compressed air applications. Attendees will learn what makes a suitable material and why traditional materials are unsuitable. Different methods of joining will be discussed as well as system repair and start-up options. Each attendee will also have the chance to assemble a unique compressed air system joint without the use of any cements, primers or heat fusion machines.

Water Quality

Basic Water Chemistry - Testing Techniques - YSI (Water Quality)

This workshop will provide basic information, tips, and tricks on performing the common water quality tests that are crucial to the operation of a zoo or aquarium system. This 45 minute workshop will demonstrate and provide hands on training for common testing like Nitrogen Cycle (Ammonia, Nitrite, and Nitrate), Chlorine, Bromine, Phosphate, Copper, pH, Temperature and Salinity by use of a variety of testing methods. The focus of this workshop is to compare testing methods with cost and accuracy.

Proper Calibration & Maintenance of DO, pH & Conductivity Sensors - YSI (Dry)

This workshop will go over the proper way to calibrate the parameter DO, pH, ORP and Conductivity. It will include hands on calibration with the proper worksheet and information needed for calibration records.This will also go over when it is recommended to calibrate and what standards to use for your application.

Water Quality Lab Safety - Karen Tuttle Stearns - Aquarium of the Pacific (Water Quality)

This lecture will provide an overview of Laboratory Safety. This 45-minute lecture will cover basic laboratory best practices in safety standards like laboratory hazards, personal protective equipment, storage of chemicals, chemical spills and laboratory green practices. The focus of this lecture is laboratory best practices.

Husbandry

Jellyfish Kreisel workshop-Libby Nickels

The jellyfish workshop will focus on using various kreisels to keep jellies alive and healthy. Techniques will also be shown on jelly care, feeding and propagation.

Aquascaping-Steve Bitter

Aesthetic principles of aquarium design, common materials and techniques that can be used to theme and refresh exhibits, examples of exhibit overhaul processes and schedules, and a review of vendors and contractors.

Shipping corals workshop-Paul Poeschl, Dynasty, Cairns Marine

The shipping corals workshop will focus on the various methods used to ship corals around the country. Techniques will be shown for shipping in all kinds of weather and for extended periods of time.

Live Food workshop-Andy Rhyne

This workshop will focus on the techniques used to raise live foods for fish larval rearing. Techniques will be shown starting with algae raising to how to raise the copepods for larval rearing.

Parasite ID and Treatment-Barrett Christie and Rob Jones

This workshop will focus on the identification of various common parasites that are commonly found in public aquariums. The workshop will discuss the various treatments that can be used to eradicate these parasites from exhibits and the different life cycles of each.

Fish larval rearing-Andy Rhyne

The fish larval rearing workshop will focus on the equipment and techniques of raising larval fish. This in depth workshop will show the various ways to raise and grow most larval fish.

Coral Propagation and microfragging workshop-Skylar Snowden and Shawn Gardner

The coral propagation and microfragging workshop will demonstrate the various ways to propagate stony and soft corals. The workshop will also teach how to microfrag your corals and how to mount and glue them once they have been fragged.

Species360 ZIMS for Aquatics Workshop – Kim Larson

This workshop will provide an overview of key ZIMS functionality for aquariums, including water quality,graphing tools, reporting options, aquarist daily logs, care and welfare tracking, global resource tools and time-saving tricks for quick and easy data entry. Discussion will include best practices for managing groups, enclosure/life support systems, and the value of global data from aquariums. Attendees will have plenty of open time for questions and hot topics, and will help drive the conversation towards valued areas of discussion. All are welcome to attend, including Species360 members and non-members; targeted audience includes aquarists, curators, husbandry directors, registrars, life support operators/managers and water quality managers/technicians. Attendees are encouraged to bring laptops, if available, and will be able to gain hands-on experience working in the ZIMS platform.

Species360 ZIMS for Studbooks Workshop – Erika Fronk

This workshop is aimed at both current and future ZIMS for Studbooks users.Topics covered in the workshop will provide attendees with the information needed to familiarize themselves with ZIMS for Studbooks and gain hands-on experience with the Software. Topics in the workshop will include: how to migrate to ZIMS, next steps after migration, overview of the software and tools available within the studbook. Please bring your own laptop to access the software if available. Target audience: Anyone interested in ZIMS for Studbooks, including current and future users. Including Studbook Keepers, SSP Coordinators, TAG Chairs, Institutional Representatives, etc. Expected outcomes: Attendees will learn how to get their studbook migrated to ZIMS and how to manage their data in ZIMS for Studbooks. There will also be opportunities to have their ZIMS questions answered. The facilitators will learn more about the questions that the aquatics community has about ZIMS for Studbooks and this will inform our future plans for additional courses and training.

Light testing, evaluation, and comparison- Tulio Dellaquila - Reef Brite

The workshop would be based on using light measurement devices to test, evaluate, and compare light sources for facility use. It would cover all current and existing lighting technologies focusing on the advantages and disadvantages of each depending on the application. It would also educate participants on which light testing device would be best suited depending on its intended use. I would have an assortment of actual light testing and measurement devices that participants could use during the workshop that they would use on actual light sources to gain on-hand experience in their use. Time permitting I would also address any questions regarding a given measurement device and or lighting technology being used.

Marine Fish Taxon Advisory Group Steering Committee -Closed Session

Annual executive business meeting for the AZA's MFTAG steering committee

Freshwater Fish Taxon Advisory Group Steering Committee -Closed Session

Annual executive business meeting for the AZA's FFTAG steering committee

Aquatic Invertebrate Taxon Advisory Group Steering Committee -Closed Session

Annual executive business meeting for the AZA's AITAG steering committee

Marine Fish Taxon Advisory Group- Public

Annual reporting meeting for the AZA's MFTAG

Freshwater Fish Taxon Advisory Group- Public

Annual reporting meeting for the AZA's FFTAG

Aquatic Invertebrate Taxon Advisory Group- Public

Annual reporting meeting for the AZA's AITAG

Exam Prep

Life Support Levels 1 and 2 Certification Exam Prep - LSS Certification Committee(Exam Prep)

This workshop will cover the format of the certification exams, and focus on the math and calculations found in the AALSO Field Guide.

Life Support Level 3 Certification Exam Prep - LSS Certification Committee (Exam Prep)

This workshop will cover material for the Life Support Level 3 exam through an example problem and will allow time for discussion.

Water Quality Levels 1 and 2 Certification Exam Prep - Water Quality Certification Committee (Exam Prep)

This workshop will cover the format of the certification exams, and focus on the math and calculations found in the AALSO Field Guide.

Water Quality Level 3 Certification Exam Prep – Water Quality Certification Committee (Exam Prep)

This workshop will cover material for the Water Quality Level 3 exam through example problems.

Certification Exams

Life Support Level 1 Exam:

The life support operator certification acknowledges general operator proficiency with tasks ranginging from basic routine operations to advanced applications and theory, covering topics such as: sand filtration, biological filtration, chemical filtration, cathodic protection, turbidity, safety, pump curves, troubleshooting, pool volume calculations, filter surface area calculations, and pool turnover rate calculations.
Eligibility: Current AALSO members who are any one of the following: actively employed in the animal care industry, provides goods and services to the animal care industry, students from aquarium based programs, or working in a related field and looking to transition into a life support or water quality role. It is possible to take both the level 1 LSS and level 1 WQ exam during the same symposium.
60 minutes for LSS level 1
25 Multiple Choice Questions
- 15 Operational Questions
- 5 Safety and Regulatory Questions
- 5 Mathematical Calculations

Life Support Level 2 Exam:

The life support operator certification acknowledges general operator proficiency with tasks ranginging from basic routine operations to advanced applications and theory, covering topics such as: sand filtration, biological filtration, chemical filtration, cathodic protection, turbidity, safety, pump curves, troubleshooting, pool volume calculations, filter surface area calculations, and pool turnover rate calculations.
Eligibility: Current AALSO members who are any one of the following: actively employed in the animal care industry, provides goods and services to the animal care industry, and students from aquarium based programs. In order to sit for the level 2 exam, you must have passed the level 1 exam with a score of 70% or higher. Please note, you are unable to sit for a level 1 and then proceed to a level 2 exam during the same symposium.
60 minutes for level 2
25 Multiple Choice Questions
○ 14 Operational Questions
○ 4 Safety and Regulatory Questions
○ 7 Mathematical Calculations

Life Support Level 3 Exam:

The life support operator certification acknowledges general operator proficiency with tasks ranginging from basic routine operations to advanced applications and theory, covering topics such as: sand filtration, biological filtration, chemical filtration, cathodic protection, turbidity, safety, pump curves, troubleshooting, pool volume calculations, filter surface area calculations, and pool turnover rate calculations.
Eligibility: Current AALSO members who are any one of the following: actively employed in the animal care industry, or provides goods and services to the animal care industry. In order to sit for the level 3 exam, you must have passed both the level 1 exam and the level 2 exam with a score of 70% or higher. Please note, you are unable to sit for a level 2 and then proceed to a level 3 exam during the same symposium. If you are sitting for a level 3 exam, you are not eligible to sit for an additional exam during the same symposium.
90 minutes for level 3
Approximately 25 Questions

Water Quality Level 1 Exam:

The water quality technician certification acknowledges general operator proficiency with tasks ranging from basic laboratory techniques to advanced applications and theory, covering topics such as: laboratory safety, laboratory equipment and measurements, quality assurance and assessment, nitrification, denitrification, basic microbiology monitoring, understanding stoichiometry and chemical reactions and dilutions.
Eligibility: Current AALSO members who are any one of the following: actively employed in the animal care industry, provides goods and services to the animal care industry, students from aquarium based programs, or working in a related field and looking to transition into a life support or water quality role. It is possible to take both the level 1 LSS and level 1 WQ exam during the same symposium.
60 minutes for level 1
25 Multiple Choice Questions
○ 10 Water Quality Testing Theory Questions
○ 5 Safety and Regulatory Questions
○ 4 Analytical Equipment Questions
○ 5 Quality Control/Quality Assurance Questions
○ 1 Mathematical Calculation

Water Quality Level 2 Exam:

The water quality technician certification acknowledges general operator proficiency with tasks ranging from basic laboratory techniques to advanced applications and theory, covering topics such as: laboratory safety, laboratory equipment and measurements, quality assurance and assessment, nitrification, denitrification, basic microbiology monitoring, understanding stoichiometry and chemical reactions and dilutions.
Eligibility: Current AALSO members who are any one of the following: actively employed in the animal care industry, provides goods and services to the animal care industry, and students from aquarium based programs. In order to sit for the level 2 exam, you must have passed the level 1 exam with a score of 70% or higher. Please note, you are unable to sit for a level 1 and then proceed to a level 2 exam during the same symposium.
60 minutes for level 2
25 Multiple Choice Questions
- 8 Water Quality Testing Questions
- 6 Chemistry Questions
- 4 Safety and Regulatory Questions
- 9 Mathematical Calculations

Water Quality Level 3 Exam:

The water quality technician certification acknowledges general operator proficiency with tasks ranging from basic laboratory techniques to advanced applications and theory, covering topics such as: laboratory safety, laboratory equipment and measurements, quality assurance and assessment, nitrification, denitrification, basic microbiology monitoring, understanding stoichiometry and chemical reactions and dilutions.
Eligibility: Current AALSO members who are any one of the following: actively employed in the animal care industry, provides goods and services to the animal care industry, and students from aquarium based programs. In order to sit for the level 3 exam, you must have passed both the level 1 exam and the level 2 exam with a score of 70% or higher. Please note, you are unable to sit for a level 2 and then proceed to a level 3 exam during the same symposium. If you are sitting for a level 3 exam, you are not eligible to sit for an additional exam during the same symposium.
90 minutes for level 3