

SKIDAWAY INSTITUTE OF OCEANOGRAPHY

**R/V SAVANNAH
CRUISE PLANNING MANUAL
Revised 07/02/08**

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SECTION I: SHIP AND SHIP'S EQUIPMENT

General Vessel Specifications

SHIP NAME:	R/V <i>Savannah</i>	
OWNER:	Board of Regents of the University System of Georgia	
OPERATOR:	Skidaway Institute of Oceanography	
BUILT		
BUILDER:	Washburn & Doughty	
HULL NUMBER:	72	
LOCATION:	East Boothbay, ME	
YEAR:	2001	
LENGTH		
LOA:	91.6	feet
LWL:	82	feet
BEAM:	27	feet
NAVIGATIONAL DRAFT:	8.5	feet
DISPLACEMENT		
FULL LOAD		
DISPLACEMENT:	329.59	Long tons
LIGHTSHIP		
DISPLACEMENT:	223.88	Long tons
ADMEASUREMENT		
INTERNATIONAL GROSS:	265	tons
OPERATED AS:	Oceanographic Research Vessel	
CLASS:	ABS Load Line Only	
USCG INSPECTED:	No	
USCG DOCUMENTATION:	Yes	

Propulsion

Main Engines: Twin 450 BHP Caterpillar 3406 E Diesel Engines
Bow Thruster: 65 HP 16" American Bow Thruster D08 - DCV at 2200 psi

Range, Speed, and Endurance

Cruise Speed:	9.0 kts.
Max Speed:	10.0 kts.
Range at Cruise Speed:	2160 n.m.
Endurance:	12 Days (limited by fuel)

Electrical Service

The R/V *Savannah* is equipped with two 90 kW - 208 V - 3 PH - 60 HZ output diesel-driven Cummings/ONAN model MCGDB Standard Profile - 1800 RPM ship service

generators. Uninterrupted power supplies (UPS) are available for scientific use in both the dry and wet labs. Please note that not all receptacles are UPS protected. Ship users are expected to discuss UPS power needs with the Marine Technician or Engineer if UPS power needs will exceed 20A. Our ship is capable of supplying approximately 90 kW of deck related power for scientific needs. If total power requirements will exceed this level the Chief Engineer or Marine Superintendent should be consulted well in advance of the cruise.

Salt Water

Two clean seawater supply outlets (3/4") are located on the starboard aft deck area near the J-Frame. This water is provided by one of two 25 gpm pumps that draw in water 2m below the water line. Seawater can also be collected at specified depths using 8 L Niskin water bottles attached the ship's CTD (see more on CTD below). A raw seawater supply outlet (3/4") from the ship's General Service supply pumps (25 gpm) is also available on the fantail. If larger amounts of raw seawater are required, the Chief Engineer should be consulted well in advance of the cruise.

PUMPS (n=2)	SYSTEM PRESSURE	CAPACITY	OUTLETS
Sherwood Model 13257	30 psi	25 GPM	Aft Deck – 2 - 3/4" hose)

Fresh Water

The ship holds 4,282 gallons of fresh water. There is no water maker onboard thus conservative fresh water use should be maintained on longer cruises (>5days). For science needs, a fresh water sink is located in both the dry and wet labs. In addition, a fresh water wash down hose is located on the fantail.

PUMPS (n=2)	SYSTEM PRESSURE	CAPACITY
Arora 324A-AB	40 psi	4,282.00 Gal. (Tankage)

* The Savannah does not have a watermaker.

Compressed Air

Compressed air is available on the aft deck from one of two compressors. If further compressed air applications are needed please contact the Chief Engineer in advance of the cruise.

Sears Craftsman 7 hp
Power: 240/60/1 Single Phase - 20 Amps

Capacity: 80 Gallons, 175 psi (Max)

Quincy - Model 201 1 hp
Power: 220/60/1 Single Phase
Capacity: 30 Gallons

Crane

The ship is equipped with a marine grade crane used to primarily load/unload the vessel at the dock, re-position deck gear, and launch the RHIB while at sea. The crane is driven by a Hawboldt Industries Hydraulic Power Unit.

Palfinger Marine – Type PK 23500 ME S2.5S

Installed R/V Savannah: 06/10/08

Serial # 1340169
Load Capacity: 5600kg (12,346 lbs.)
960kg (2116 lbs.) at full extension

Max. outreach: 16.7 m

Slewing angle: 400 degrees

Winch: Argani Verricelli
Type: S 2.5/R
Code: 9015368
Man: 2007
Nominal line pull: 22 kn.
Weight: 103 kg.

Wire rope: 12 mm
Length: 49 m
Capacity: 4610 lbs. – 3rd wrap
Line speed: 36 m/min. @ 3rd wrap
Breaking strength: 5 x SWL

A-Frame

Stern mounted with 12' reach at 5000 lbs
Design capacity - 40,000 lbs
Safe Working Load: 5,000 lbs
Vertical Clearance: 14'3"
Horizontal Clearance: 13'7"
Reach: 12' out - 7'6" inward
Last Weight Test: 8-30-01 12,500 lbs

J-Frame

Starboard Side mount with 9'2" reach/2000 lbs
Design Capacity - 22,500 lbs
Safe Working Load: 2,000 lbs
Vertical Clearance: 12'0"
Horizontal Clearance: 5'0" at Bulwark Opening
Reach: 9'2" out
Last Weight Test: 8-30-01 @ 2,500 lbs

CTD Winch #1

Markey - Type COM-7-H-1 Compact CTD Winch
Drum Capacity: 1500 m of 0.322" diameter cable
Wire Loaded: 65 m Vectran braid line to 930 m of 0.322" conducting cable
Deck Lift Capacity: 1950 lbs
Line Pull - 3729 lbs
Speed - 124 ft/Min
Winch Weight (without cable) - 1100 lbs

CTD Winch #2

Markey - Type COM-7-H-1 Compact CTD Winch
Drum Capacity: 1500 m of 0.322" diameter cable
Wire Loaded: 1500 m of 0.322" conducting cable
Deck Lift Capacity: 1950 lbs
Line Pull - 3729 lbs
Speed - 124 ft/Min
Winch Weight (without cable) - 1100 lbs

Trawl Winch

Markey DUP-8 – 90 hp - Hydraulic / PTO Drive
Max Line Pull: 10,000 lbs @ 75 ft/min on the third layer
Rated drum capacity: 3,218' of 1/2" diameter 6 X 19 wire rope
Line Loaded: 500 m of 6x19 1/2" wire rope
Winch Weight: 4000 lbs

Work Boat

A 13' Avon RHIB (rigid hull inflatable boat) with a Honda 4-stroke 40 hp outboard motor is carried at all times and is the designated work and rescue boat. The boat has a capacity of 1200 lbs or 6 persons.

Navigation

The ship utilizes the following electronic navigation equipment:

- Furuno DGPS Navigator - Model GP-90
- Furuno DGPS Navigator - Model GP-36
- Northstar 957 GPS/WAAS Chart Navigator
- Furuno 15" Multi-color High-performance Shipboard Radar/ARPA
Model FR-1525 Mark-3, X-band 25 KW
- Furuno Marine Radar/ARPA Model- 2127-BB 25 KW
- Raytheon Autopilot PT-50
- Yokogawa CMZ700B Gyrocompass Model MKM022
- Furuno Color Video Sounder - Model FCV-292 - 50/200 kHz
- Furuno Color Video Sounder – Model FCV-582 (located in dry lab) - 50/200 kHz
- Furuno UAIS Transponder - Model FA100
- Nobeltec Visual Navigation Software - version 9.0 ED

Communications

The ship provides the following communications:

- Inmarsat Fleet 55 Satellite Communications for phone, internet, and email services
 - Satellite phone – Contact SkIO’s Marine Superintendent (912.598.2400)
 - Internet/email (MPDS and 64 kb ISDN)
- Cellular phone service – ship cell number - 912.667.2172
- ICOM VHF Marine Radio - IC-M304
- Furuno VHF Radiotelephone Model FM-8500
 - R/V *Savannah* ID - 366819770 w/ Newmar Regulated Linear
- Furuno Single Side Band Radiotelephone - Model FS-5000 - Eq. Class
- Furuno Navtex NX-300 Receiver
- Raytheon 430 Loudhailer

General Capacities

Diesel fuel	10,496 gallons
Freshwater	4,283 gallons
Wastewater	500 gallons
Ballast	21,508 gallons

Scientific Lab Space

A dry and wet lab is available for scientific experiments, bench space, storage, etc. On request, a radioisotope van can be placed on the main deck. Below are specifications for each area.

Dry Laboratory- 308 sq. ft.

- Located on the ship's port side
- Serves as ship's dedicated instrumentation room and repair space
- Ship's Scientific Computer System (SCS) is located in the forward section
- Laboratory shelving and bench space available
- Bench plotting table for scientific use
- Air conditioned and heated
- 120V UPS receptacles, in addition to unprotected power supplies
- Fume hood
- Fresh water sink

Wet Laboratory – 158 sq. ft.

- Located on the ship's starboard side
- Ship's flow thru thermosalinograph (SBE 21) located in the aft section
- Laboratory shelving and bench space available
- Mini-freezer (21x23x32)
- Mini-refrigerator (24x23x30.5)
- 120V UPS receptacles, in addition to unprotected power supplies
- Fresh water sink
- Clean (uncontaminated) seawater supply available

Radioisotope Van

A new "UNOLS Standard" aluminum radioisotope van is available in addition to the two lab spaces above. On request, this van can be positioned on the fantail given adequate notice.

- Intended primarily for radioisotope work, but may be used for other activities
- Air conditioned
- Beckman 6500 scintillation counter
- Fume hood, sink, hot and cold fresh water, 120 V power supply
- Refrigerator and freezer (may not be used for radioactive materials)
- Personnel door on one end, double doors on other
- Meets current RVOC safety standards

Scientific Berthing

The R/V *Savannah* can berth up to 18 scientists. Berthing is further discussed in Section III of this manual and a berthing diagram is included in the Appendices.

SECTION II: SCIENTIFIC EQUIPMENT

Shared-Use Equipment

The R/V *Savannah* maintains a large pool of NSF-supported shared-use equipment which can be made available for your cruise. Prior to your cruise, you should receive and fill out a Request for Shared-Use Equipment form. A copy of this form with policy statements, user fees, and a schedule can be found in Appendix 6. Requests for this equipment should be made as far in advance as possible of the cruise date to insure equipment availability. Scheduling is on a "first-come, first-served" basis. A brief listing of available equipment follows:

- Otter trawl
- Culling table
- Bongo plankton nets
- Dive compressor
- USNEL single spade box corer (20 x 30 x 60 cm box)
- Acrylic tube corer (30 x 7 cm. clear cylindrical core)
- Bottom Lander – used for in situ benthic flux chamber experiments
- Portable electric/hydraulic winch

Shipboard Data Acquisition System

The RV *Savannah* collects and displays various data using the NOAA developed Shipboard Computer System (SCS Version 4.0.29). The SCS consists of three basic components: 1) A suite of sensors and electronics, 2) a data acquisition system, and 3) a real-time data display. Sensor data is saved to individual files. In addition, data from specified sensors is merged and saved to an individual event file. Real-time data displays can be found on the SCS server interface and through networked computers running the SCS's software.

Parameters routinely logged at 6 second intervals throughout the cruise include:

1. Date/time (GMT)
2. Ship position (Differential GPS)
3. Ship speed over ground
4. Ship course over ground
5. Gyro heading
6. Depth
7. True wind speed and direction
8. Air temperature
9. Barometric pressure
10. Relative humidity
11. Sea surface temperature, conductivity, and salinity
12. Color dissolved organic matter

Following each cruise SCS data is saved to disk and distributed to the Chief Scientist.

Conductivity, Temperature, and Depth Profiler (CTD)

A CTD profiler consisting of a water carousel (SBE 32) and datalogger (SBE 25) is available for vertical water column profiles and to collect water samples at discrete depths up to 600 meters. Water samples can be collected from 8L Niskin water bottles (n=8). The standard carousel sensor configuration follows:

1. Temperature
2. Conductivity
3. Chlorophyll fluorometer
4. Color dissolved organic matter fluorometer (CDOM)
5. Photosynthetic Active Radiation
6. Backscatter
7. Dissolved oxygen

ADCP

Current direction and magnitude are collected and logged to file using T-RDI's 300 kHz workhorse acoustic doppler current profiler (ADCP) mounted in the ship's well (2.5 m below the water line). A T-RDI 1200 kHz ADCP is also available for shallow water needs and can be mounted in the ships well or over the side on a pole mount (fixed 1 m below the waterline). Requests for the 1200 kHz unit must be made well in advance. Raw ADCP data is provided on disk following each cruise.

Shipboard Computers

A computer bank with three servers is located in the forward section of the dry lab. These servers run the SCS, ship network, and ADCP. A client desktop PC is adjacent to the server bank and is used to communicate with the CTD and to perform other tasks performed by the Marine Technician. These computers are for ship personnel use only. Permission to use these computers by the scientific party must be given by the Marine Technician prior to use. Two ship laptops are available for scientific use and can be connected to the ships network in the dry and wet lab. See Appendix 12 for a network diagram.

SECTION III: PRE-CRUISE PLANNING

The designated Chief Scientist is responsible for coordinating, planning, and reporting for his/her cruise. After a preliminary ship's schedule for the R/V *Savannah* has been prepared (typically in September for the following year) a Cruise Planning Form will be sent to the Chief Scientist. This form needs to be returned to the Marine Superintendent for distribution to the R/V *Savannah* crew and Marine Technician well in advance of the cruise.

Contacts

Marine Superintendent

Dr. Jim Sanders - jim.sanders@skio.usg.edu
912.598.2400
912.598.3340

Captain

Raymond Sweatte – raymond.sweatte@skio.usg.edu
912.598.2465
912.667.2172

Chief Engineer

To be determined

Marine Technician

John Bichy – john.bichy@skio.usg.edu
912.598.2465
912.667.2172

Scheduling / Daily Rate

To schedule the R/V *Savannah* visit the NSF/UNOLS website (<http://www.unols.org/index.html>) and follow the link to the Ship Time Request and Scheduling System (STRS). Generally, ship time requests should be submitted by February 1 for a research project planned for the following calendar year. Scheduling is submitted by the Marine Superintendent at the annual NSF/UNOLS Ship Scheduling meeting in September. Daily rates for the ship and marine technician support are negotiated each year with NSF and provide for a standard crew of four, marine technician, food, fuel, and accommodations for up to 18 science personnel. Scientific equipment listed in this manual is also included. For cruises requiring 24-hour science operations involving deck work, fill-in crew will be brought onboard at additional cost to the daily rate. These requirements should be discussed well in advance with the Captain and Marine Superintendent. The same rate is charged to all users (some additional charges may be incurred by non-NSF funded users in unusual circumstances).

Cruise Plan

A cruise plan form (Appendix 2, available electronically) is required a minimum of **15 days in advance** of the cruise. This cruise plan form is the key document used to assure the ship's equipment and personnel are available and ready for your cruise. The following should be considered when completing the form:

- The "Purpose" section of the cruise plan form may be provided to the local media or other members of the press in response to inquiries as to R/V *Savannah's* operations. A short, non-technical description is best understood by the general public.
- A detailed "Itinerary" complete with station positions and estimated times of arrival and departure is very useful even if it must be modified during the course of the cruise because of weather, scientific findings, or other unanticipated events. In our experience there is a high correlation between detailed planning and successful operations.
- The "Equipment Required" section should include both ship's equipment (winches, cranes, capstan, etc. -- detailed in Section I of this manual) and "Shared-Use Equipment" (scientific equipment -- detailed in Section II of this manual) needed for the cruise.
- The designated "Scientist in Charge" will have all the responsibilities defined as those of the "Chief Scientist" in this manual.
- "User Supplied Equipment" must include the actual weights of any heavy objects such as vans or user supplied winches. The weights are critical in determining the trim and stability of the ship as well as the ability of the ship's equipment to handle them.
- "Other Bulky Heavy Items" should include items such as large objects to be towed (side scan sonar, camera sled, etc.) or deployed (buoys, instruments). Weights, as above, are critical. Heavy objects to be moved at sea should be securely assembled and equipped with adequate lifting points as well as points for attaching tag lines to keep the weight from swinging when lifted. Stacks of railroad wheels should have three sections of round stock welded vertically holding the individual wheel in place and pear links or pad eyes welded on for tag lines.

Special Operations

The operations identified below should be identified in the Ship Time Request Form and Cruise Plan Form and should be coordinated well in advance.

Foreign Operations

Clearances: Any operations in the exclusive economic zones (generally within 200 nm of a foreign coast) or requiring port calls outside of the United States will require clearances. Depending on the country, these clearances must be obtained many months (6 months is common) in advance through the U.S. State Department. Chief Scientists should refer to the applicable U.S. Department of State [*Notice to Research Vessel Operators*](#) for additional information.

Customs and Immigration: Foreign port calls will require all scientists embarked, meeting or leaving the ship to go through Customs and Immigration. Individuals are responsible for meeting U.S. and foreign nation customs, immigration and immunization regulations. SkIO Ship Operations will not make arrangements for members of the science party or scientific equipment being shipped into or out of a foreign country.

Foreign Agents: R/V *Savannah* will, in general, have an agent in a foreign port which may be used, at their expense, by members of the scientific party. The name of the agent and additional details will be available from the Marine Superintendent.

Radioisotope Work

Any cruise requiring the use of radioisotopes must be coordinated with the Marine Superintendent well in advance. This work requires approval and monitoring by the SkIO Radiation Safety Officer. Radioisotope work is confined to either the ship's radiation laboratory van or vans supplied by the science party. The Chief Scientist is responsible for the safe use and transport and clean-up of all radioactive material including waste generated onto and off the ship. In no case may radioactive waste be left on the ship. Radioisotope swab tests must be conducted before and after the cruise, with written reports submitted to the marine technician.

Explosives

The transport, loading and use of explosives is strictly regulated by the U.S. Coast Guard. Any use of explosives must be coordinated well in advance with the Marine Superintendent.

Hazardous Materials

Programs using hazardous materials shall be coordinated well in advance with the Marine Superintendent. The Chief Scientist is responsible for the safe use, storage and disposal of all hazardous materials brought on the R/V *Savannah*. The Chief Scientist shall assure that Material Safety Data Sheets (MSDS) for all materials are brought onboard and made available to the ship's Captain. The Chief Scientist will also assure that adequate containment materials, neutralizing agents, etc., are available on the ship to deal with spills or other accidents. In general, hazardous materials (e.g., formalin) are not to be used in the ship's laboratories and must be confined to laboratory vans or open decks.

Diving Operations

Diving operations from R/V *Savannah* are subject to the NAUI, AAUS & SkIO Dive Policy (Appendix 7) and the UNOLS Research Vessel Safety Standards. Projects with diving operations should contact the Marine Superintendent & SkIO Dive Master well in advance.

Reporting of Surface and Subsurface Obstacles

Surface and subsurface moorings and bottom mounted instrument packages can present hazards to navigation to surface vessels or submarines and can damage, or be damaged by, fishing vessels. The Principal Investigator/Chief Scientist is responsible for obtaining any necessary permits from appropriate regulatory bodies (e.g., USCG and USA-COE for designated navigation channels, traffic schemes, etc.; NOAA Sanctuary Managers for designated marine sanctuaries, etc.) and for reporting the establishment and disestablishment on any surface or subsurface obstacles. Information on designated areas is available from the latest nautical charts for the operating area, the Coast Pilot or Sailing Directions for the area and the UNOLS web site (www.unols.org). The Ship Operations Office can provide assistance and the R/V *Savannah* can send messages regarding deployment or recovery but the responsibility remains with the PI/Chief Scientist.

Compressed Gas Cylinders

Compressed gas cylinders must be secured at all times on board R/V *Savannah*. Portable racks are available for a limited number of bottles. Projects using a large number of bottles should provide racks or pallets. Bottles not in use are to be stowed upright with the caps in place. Flammable gasses must be stowed on the weather decks.

Personnel

All personnel on a cruise who are not explicitly members of the ship's crew or an assigned SKIO Marine Technician are considered to be members of the scientific party and, as such, under the direction of the Chief Scientist. The Chief Scientist has the authority to determine the makeup of the science party and the responsibility to assure compliance with institution policy. Clearance forms and medical information will be required of all scientific party members.

Clearance Forms

A SKIO Liability Waiver form (Appendix 4) will be required for each scientist. Note that a portion applies only to foreign cruises. This form will normally be e-mailed to the Chief Scientist for forwarding and completion by all members of the science party. The completed form can be e-mailed back to Ship Operations and a printed copy will be available on the ship for signature. This procedure saves time and confusion during loading of the ship.

Medical Information

All crew members of the R/V *Savannah* are trained in CPR and First Aid. Several have advanced first aid such as that provided by Medical Advisory Systems (MAS). In addition, the ship has access to a contract medical advisory service which can provide advice in a medical emergency via satellite or other communications methods. The ship carries a supply of medications and medical equipment for emergency use under the

direction of MAS. Individuals are responsible for discussing any known medical conditions with the Chief Scientist for the cruise and judging the liability they pose to themselves and the scientific mission. In the case of serious injury or medical emergency, scientific work will be terminated and the ship will proceed to evacuate the patient to the nearest competent medical facility. Individuals requiring medication must bring an adequate supply of required medications. Those with a medical condition or on prescription drugs should note the condition and medications on the *Medical History Questionnaire* form. This information will be used only in case of emergency.

Scientific Berthing

The R/V *Savannah* has 18 bunks for scientific personnel. The First Mate is responsible for assigning berthing arrangements for the scientific complement. The Chief Scientist should check with Ship Operations before assigning the two bunks shared with crew members to determine their gender.

There is no steward service. Scientists are responsible for keeping their quarters clean and orderly. Clean sheets, pillowcases, and towels are provided weekly. Upon completion of the cruise, the departing scientists shall give their quarters a thorough cleaning so they will be habitable for the next occupants.

Loading

In general, one day will be allowed for loading the R/V *Savannah* prior to a cruise. A crane operator and other members of the department will be available during the normal workday (0800-1630) to assist. A forklift (10,000 lbs. capacity) and operator can also be made available. The Chief Scientist is responsible for arranging any shoreside support (forklifts, etc.) required in ports away from Savannah, GA. The scientific party is responsible for the arrangement and securing of scientific equipment on deck and in laboratories. R/V *Savannah's* crew can assist with heavy equipment on deck and has a limited supply of straps, chain, and chain binders for securing equipment. One day is normally allowed for unloading.

When R/V *Savannah* calls at ports outside of the U.S. a ship's agent will be retained to provide logistical support. The agent's services encompass port formalities, arranging for fuel, provisions, handling official shipments to and from the ship, and assisting persons joining and leaving the ship (including procurement of tickets and reservations when required). The Chief Scientist may arrange for a separate billing with the ship's agent or may make arrangements with another agent. If this is not possible, the Chief Scientist may be authorized to use the ship's account with the agent to provide services to the science party by authorizing a purchase order as described below. While agents are normally very friendly and helpful, all individuals in the scientific party should recognize that every action by the agent results in a charge that can be substantial. SkIO will charge the appropriate Chief Scientist for costs incurred on behalf of, and directly related to, the science programs. Such services may include:

1. Expenses of required foreign observers
2. Air fares for unexpected travel
3. Taxi fares
4. Rental cars
5. Debarkation fees in foreign ports
6. Shipping and handling charges for science equipment
7. Commercial crane or forklift service
8. Stevedores
9. Purchase of supplies (gases, chemicals, etc.)
10. Satellite communication charges
11. Medical expenses
12. Services for repair of science equipment

The Chief Scientist has financial responsibility for these costs and is advised to assure that provisions are made to properly assign charges to the projects participating on a cruise. It is recommended that the Chief Scientist notify co-PI's of anticipated financial obligations well in advance of the cruise.

The Chief Scientist is responsible for establishing a purchase order with SkIO Ship Operations in advance of the cruise to provide a mechanism for charging these services. This purchase order must be established prior to the Chief Scientist being authorized to use the agent's services.

Please be aware that bills from agents may arrive several months after the last port call and that SkIO's billing will follow the agent's billing. SkIO does not charge any administrative fee for this service.

The Captain will provide the agent with a list of authorized signatories (e.g. the Captain, Marine Technician, Chief Engineer, Chief Scientist (note the requirement above for a purchase order), and other scientists if designated by the Chief Scientist. The agent will be instructed that SkIO will not pay for any charges made by the ship or science party without a signed authorization. This form must be signed by an authorized ship's officer and the scientist generating the request. SkIO will bill the Chief Scientist for services to the science party when the agent's invoice is received, translated if necessary, and reconciled. This has occasionally taken six or more months after completion of foreign research cruises.

Insurance

Insurance coverage is only provided for equipment owned by SkIO and personnel employed by SkIO. Please check with your home institution on their policy regarding insuring equipment and personnel while in use at sea.

SECTION IV: DURING THE CRUISE

The Skidaway Institute of Oceanography operates the R/V *Savannah* to support scientists conducting oceanographic research and education. A clear understanding of the roles of the Captain and Chief Scientist, and good communication between them, is required to assure both the safety and success of any cruise.

Responsibilities, Authorities and Interactions

Captain

The Captain of a vessel, by law and long-standing tradition, has the full and final responsibility for the ship and all people onboard. In association with this responsibility he has full authority over all operation and personnel, both crew and scientific party. If circumstances require alterations of the scientific operations for safety or legal reasons, the Captain shall inform the Chief Scientist and work to resolve the problems at hand. Disagreements between the Captain and the Chief Scientist which cannot be resolved onboard shall be expeditiously referred to the Marine Superintendent. However, in all decisions regarding safety or legal matters, the Captain's authority is absolute.

Chief Scientist

One member of the scientific party is designated as the Chief Scientist. This designation is required to provide a clean line of communication between the operating crew and the scientific party. This individual is responsible for all scientific projects of all scientists conducted on their cruise including the scheduling of the work. In addition, the Chief Scientist is responsible for supervising the scientific party in matters of organization, administration, safety, and compliance with shipboard regulations and legal requirements (e.g., occupational safety and health, environmental compliance, etc.).

The Chief Scientist should consult frequently with the Captain and Marine Technician regarding the operational details and progress of the cruise. The Chief Scientist has the authority to modify the scope and order of work, cruise track, etc., within the general scope of the cruise plan. Deviations from the cruise plan are to be discussed with the Captain before implementation. The Marine Superintendent shall be notified immediately of any major deviation in program accomplishment, operating area, or schedule.

Marine Technician

Under policies established by funding agencies, one Marine Technician is required onboard the R/V *Savannah* for each cruise. He/she is responsible for scheduling shared-use equipment required for each cruise, for assisting with loading/unloading, setup logistics, and for coordination of shipboard scientific operations. The Chief Scientist should contact the assigned Marine Technician to coordinate logistics and planning. The Marine Technician can answer any questions regarding facilities, services, and

loading/off-loading. If you anticipate unusually complex operations, these should be discussed with the Marine Technician in advance so that the proper deck equipment is onboard.

At sea, the Marine Technician has some responsibilities for operation of certain shipboard equipment (echosounders, data acquisition system, CTD, GPS, shipboard computers, email, etc.). He/she will assist with operation of shared-use equipment and with scientific operations as time permits, but will not be responsible for project-supplied equipment. Duty hours for the Marine Technician at sea will generally be 0700-1900 daily. If you will have specific duties for the Marine Technician outside of this time frame, or have unusual requirements for assistance, please contact the Marine Technician assigned to your cruise well in advance to discuss them. Any questions or problems which arise at sea should be directed to the Marine Technician and/or Captain. The Marine Technician is the primary coordinator between the scientific party and crew. Because of his/her experience and knowledge, the Marine Technician should be kept informed of planned operations and unusual circumstances.

The Marine Technician is here to assist you. Please feel free to call with any questions or problems. Contact information can be found in the Section III of this manual.

Under funding agency policies, SkIO is able to supply only one Marine Technician under the Technician daily rate for the R/V *Savannah*. If you have need for an additional technician(s) at sea, please contact the Marine Superintendent in advance concerning charges for additional technicians. If you plan to leave the Marine Technician ashore due to bunk space considerations there will be no reduction in the day rate charge for use of the vessel and you must contact the Marine Superintendent well in advance. Certain shipboard equipment and systems require a Marine Technician onboard. No shared-use equipment will be released for use on the R/V *Savannah* when a Marine Technician is not onboard.

Prohibited Items

The following items are not permitted onboard the R/V *Savannah* or on SkIO property:

- Alcoholic beverages
- Narcotics and other controlled substances
- Pets
- Firearms and non-folding sheath knives

As noted on the Confidential Release and Consent Form, members of the science party may be subject to drug/alcohol testing if involved in a "Serious Marine Incident" as defined by federal regulation.

Smoking Policy

In accordance with Georgia State law and SkIO policy, smoking is prohibited in all interior spaces of the R/V *Savannah* (laboratories, public areas, berthing areas, etc.) with the exception of a designated area on the aft deck.

Reporting of Injuries and Accidents

The R/V *Savannah* has limited medical capabilities onboard as described in the pre-cruise planning section of this manual. Any accidents, injuries or illnesses are to be immediately brought to the attention of the mate on watch or the Captain. The Captain will see that appropriate treatment is provided to the ability of the ship. In the case of a medical emergency, the Captain has the final responsibility and authority for the appropriate course of action including medical evacuation or termination of the cruise.

Arrivals and Departures

In home port, and on port calls between cruises away from home port, the oncoming scientific party will normally board the ship by 0800 and the ship will depart at 1000. The oncoming scientific crew can request berthing onboard the night before departure. In most cases this can be accommodated, if the ship is in port. Dinner will not be served that evening and meal service will begin with breakfast the next day.

Arrival back in port will generally be by 1600 the last day of the cruise. Lunch will be served but dinner will not be served. The scientific party should have the laboratory and berthing spaces clear and cleaned and be off the ship by the end of the day. This policy does not apply to cruises arriving late in the day or evening.

Special circumstances may require modification of these procedures. Cruise planners should consult with the Marine Superintendent in advance.

Messing Facilities

The two mess areas can accommodate approximately 16 people at a sitting. Meals are served cafeteria style during hours posted on the bulletin board. The ending time of a meal indicates the time one should finish, not arrive in line. Those finished eating should leave the area so others may be seated.

Those with special dietary requirements should make them known to the cook. The galley refrigerator is stocked for snacks after the evening meal. The ship's reefers and dry stores areas are off-limits unless permission is granted by the cook. Users of the galley and mess deck must properly dispose of all trash and leave the area in an orderly condition for the next meal.

Suitable clothing will be worn at all meals; shoes and shirts are mandatory. Rain gear, coveralls or clothes dirty from work shall not be worn on the mess deck or in the lounge.

The ship is the home for scientific personnel and the crew; courtesy dictates that conduct, including wearing apparel, be within acceptable standards.

Refuse Disposal

The R/V *Savannah* complies with Annex V of MARPOL 73/78 which forbids the overboard discharge of all plastics and restricts all other overboard disposal. No refuse shall be thrown overboard without the permission of the Captain. Separate containers for plastic waste are provided. "Sharps" shall be disposed of in appropriate containers rather than in the general garbage.

Sanitary System

The R/V *Savannah* is provided with an approved Marine Sanitation Device (MSD). Please note and comply with the posted restrictions regarding what may be put into the system.

Shipboard Clothing and Personal Items

The ship provides hard hats, work vests (for flotation), and some rain gear. All other items are the responsibility of the individual. Open-toed shoes or sandals are hazardous to the wearer onboard ship and are not to be worn when working. A stout, completely enclosed shoe is required as a minimum. Persons working on deck should consider safety shoes with reinforced toes.

A seven-day supply of clothing is recommended for longer cruises since fresh water is limited. The laundry equipment must be used by many people and will not operate in heavy weather (the laundry will be secured).

The ship provides bed linens and towels. Individuals are responsible for soap, shaving gear, toothbrush, and paste, etc. Items such as coffee pots, heaters, hot plates, etc., are not permitted in staterooms because of health and safety concerns.

Potable Water

The potable water supply is limited to the amount that can be carried onboard when the ship leaves port. All members of the scientific party are requested to conserve water at all times. This can be done by using water sparingly when showering.

Emergency Drills

Fire and abandon ship drills are required by federal regulation and are held weekly. An initial drill will occur shortly before or after departure and will include instruction from the First Mate. This drill is mandatory for all members of the scientific party. It is the responsibility of the scientific party to become familiar with their assignments for each drill and to know the location of the survival suit, life jacket, and emergency breathing

apparatus in his/her berthing area. Drills are to be taken seriously as training for survival. All members of the scientific party will attend drills properly attired with hat, jacket, and life jacket as if the ship were to be abandoned.

Safety

Working and living on a ship at sea is inherently dangerous. Each member of the scientific complement, as well as the crew, must be safety conscious at all times. Any situation or condition that might constitute a safety or fire hazard shall be corrected at once, either by the person observing the condition if it's within their purview or by notifying the watch officer on the bridge for further action.

RVOC Safety Manual

A copy of the "RVOC Safety Training Manual - Chapter 1 Research Party Supplement" is in each stateroom. Individuals who have not read it are strongly encouraged to do so -- it contains much useful information which can help prevent serious injury or even death.

Work Vests, Safety Harnesses, Hard Hats

Work vests and, if required, safety harnesses and life lines are to be worn by everyone on deck for over-the-side operations such as CTD casts, instrument deployment, and mooring work. Hard hats are required for any operations with cranes, A-frames, etc. Life vests or other appropriate flotation devices are to be worn at all times in boats deployed from the R/V *Savannah*.

Doors, Hatches, Wire Ropes

Stand clear of all wires, ropes and blocks that are under load or moving. Do not get caught between a moving object and a stationary part of the ship. Do not stand in the bight of a line that is under tension. Never wrap a line around your hand or other part of your body so that you can't let go of it immediately if you need to. Keep fingers, hands and feet away from the knife edges of watertight doors and hatches. Open doors or hatches must be secured and closed doors and hatches must be dogged. Doors are never to be allowed to swing freely with the motion of the ship. Brief exceptions may be granted in calm sea conditions (with the approval of the mate on watch) for moving heavy equipment between the deck and laboratory.

Restricted Areas

Personnel are not to enter the following areas:

- Anyone's stateroom without their explicit approval
- The engine room or other machinery space without approval of the Engineer or Captain (hearing protection will be required)
- The bridge unless approved by a crew member
- The top of the pilot house, mast, stacks or other elevated area without permission of the mate on watch (a safety harness will be required at sea and the ship's radars and communications equipment may have to be secured to eliminate RF and microwave energy hazards)

Ship to Shore Communications

Communication equipment and phone numbers are described in the first section of the manual. Those wishing to communicate with the R/V *Savannah* are encouraged to contact the shore side Ship Operations staff for any problems or unusual requirements.

SECTION V: POST CRUISE OBLIGATIONS

Shipboard Clean-up

The Chief Scientist is responsible for assuring that the members of the scientific complement clean all berthing and laboratory areas used during the cruise. This is necessary to make these areas available to the oncoming scientific party.

Cleaning guidelines are:

- Laboratories: Sweep and swab (if necessary) the decks; wipe down bench tops and cabinets; scour sinks and empty trash containers to "dumpster."
- Staterooms: Scour sink; clean mirror; wipe down fixtures; wash off any spots on bulkheads or furnishings; vacuum rugs; fold down blankets neatly at foot of bunks; put dirty linen in the laundry bag under stairs, in berthing area.
- Heads and Showers: Swab out toilets and wipe down the outside; scour shower bulkheads and deck.

Please leave these areas in the condition you would like to find them when you come onboard – this will be greatly appreciated by the next scientific party. The Marine Technician can provide cleaning equipment and advice. The Chief Scientist is also responsible for assuring that all hazardous materials are removed and disposed of properly. If the ship incurs any direct costs, such as crew overtime, professional cleaning fees or hazardous waste disposal fees because the scientific party did not fulfill their obligation to clean the designated areas or dispose of materials, they will be billed to the Chief Scientist or Principal Investigator as appropriate.

Off-Loading

The crew will assist the scientific party in unloading all equipment. A forklift can be made available but the Chief Scientist is responsible for arranging any shore side services required in other ports. All off-loading and the cleaning of spaces should be complete by the evening of arrival so the next science group can begin loading the next morning. Likewise, the off-going science party will not normally be provided with berthing on the ship that night.

Post Cruise Reporting

UNOLS Research Vessel Cruise Assessment

Once the cruise is over, the Chief Scientist is responsible for completing the UNOLS Post Cruise Assessment Report form, which can be found on line at [UNOLS](#). These forms provide useful information to the Marine Superintendent in the management of the vessel and provide UNOLS with information to evaluate the performance of the vessels in the academic research fleet. Chief Scientists are also encouraged to call or e-mail the Marine Superintendent with any comments regarding the cruise, the ship, the ship's personnel,

shore support provided or any other matter related to the ship's accomplishment of the scientific mission.

UNOLS Cruise Report/Ship Utilization Data Form

This form will be completed by Ship Operations staff and a copy forwarded to the Chief Scientist for his/her records. If errors are noted, Ship Operations should be contacted immediately for correction and re-submission.

Preliminary Cruise Report (U.S. State Department Requirement for Foreign Cruises)

The Chief Scientist will be required to complete a [Preliminary Cruise Report](#) and submit it within 30 days after cruise completion to the Research Vessel Clearance Officer at the Department of State (as outlined in the Clearance Approval received from the State Department). Additional information can be found in the State Department's Notice to Research Vessel Operators, No. 66, Rev. 1, which is available from SkIO Ship Operations or any other Marine Superintendent for the academic fleet.

CRUISE PLANNING MANUAL APPENDICES

(To access the on-line appendices below, press and hold the “Control” button then click on the desired link.)

1. [UNOLS Ship Time Request System \(STRS\)](http://www.gso.uri.edu/unols/ship/mainmenu.html)
<http://www.gso.uri.edu/unols/ship/mainmenu.html>
2. [Cruise Plan Form](http://www.skio.usg.edu:443/resources/rvsavannah/shiprequest.php) (Contact Captain Raymond Sweatte (912.598.2465) for instructions on accessing this form)
<http://www.skio.usg.edu:443/resources/rvsavannah/shiprequest.php>
3. [Medical Questionnaire \(Optional\)](http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/medical_form.pdf)
http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/medical_form.pdf
4. [SkIO Release and Waiver of Liability Form](http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/skio_release_form08_05.pdf)
http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/skio_release_form08_05.pdf
5. [R/V Savannah Deck Layouts](http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/savannah_deck_layouts.pdf)
http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/savannah_deck_layouts.pdf
6. [Shared-Use Equipment Available and Costs](http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/savannah_shareduse.pdf)
http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/savannah_shareduse.pdf
7. [SkIO Diving Policy](http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/skio_dive_policy.pdf)
http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/skio_dive_policy.pdf
8. [SkIO Policy on Radioisotopes Onboard SkIO Vessels](http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/radioisotope_policy.pdf)
http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/radioisotope_policy.pdf
9. [Radiation Van Layout](http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/radiationvan_layout.pdf)
http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/radiationvan_layout.pdf
10. [R/V Savannah Communications Policy](http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/communications.pdf)
<http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/communications.pdf>
11. [UNOLS Research Vessel Post Cruise Assessment by Chief Scientist](http://www.gso.uri.edu/cgi-bin/pcget.cgi)
<http://www.gso.uri.edu/cgi-bin/pcget.cgi>
12. [R/V Savannah Public Network Diagram](http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/rvsavannah_public.pdf)
http://www.skio.usg.edu/resources/rvsavannah/manual/pdfs/rvsavannah_public.pdf