VIMS Marine Operations:

Safety Management Manual

MARINE OPERATIONS
VIRGINIA INSTITUTE OF MARINE SCIENCE
1219 Franklin Road, Gloucester Point VA, 23062

VIMS | William & Mary
Virginia Institute of Marine Science

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Section 1: Introduction

1.1: Introduction

Virginia Institute of Marine Science, Mission Statement

The Virginia Institute of Marine Science (VIMS) has a three-part mission to conduct research in coastal ocean and estuarine science, educate students and citizens, and provide advisory service to policy makers, industry, and the public. VIMS provides these services to Virginia, the nation, and the world. Chartered in 1940, VIMS is currently among the largest marine research and education centers in the United States.

Note: VIMS operates as the graduate school and research institute for William and Mary. As such, this manual is in keeping with the policies of both William and Mary, and the Virginia Institute of Marine Science.

VIMS Marine Operations

The Marine Operations Department is comprised of a dedicated group of professionals whose primary function is to provide safe access to the marine environment for all students, staff, faulty and other users and to support the needs of these users as they relate to vessels, field support services, instrument fabrication, equipment repair and servicing.

VIMS Research Vessels

Below is a list of VIMS vessel to which this document shall be applied. With the exception of the *R/V Tyndall Pointe* which is designated as a passenger vessel and subject to regulations under the 46 Code of Federal Regulations (CFR) 46, Subchapter T, all VIMS vessels are designated as Uninspected Oceanographic Research Vessels (ORV's) as defined by 46 USC 2101 (18), which states that an ''oceanographic research vessel'' means a vessel that the Secretary finds is being employed only in instruction in oceanography or limnology, or both, or only in oceanographic or limnological research, including studies about the sea such as seismic, gravity meter, and magnetic exploration and other marine geophysical or geological surveys, atmospheric research, and biological research.

As such the implementation of this document is non-compulsory and the Institute's intentions are to establish policies and procedures in keeping with "best marine practices" so as to safely conduct vessel operations, while still maintaining the status as uninspected ORV's.

R/V Virginia

The *R/V Virginia* was designed by JMS Naval Architects and built by Meridien Shipyard in Matane, Quebec. She was commissioned to be the leading vessel of her class with capabilities of meeting a diverse range of scientific demands both inland and offshore, ranging from the Chesapeake Bay to the near coastal waters of the Atlantic seaboard.

The general science mission requirements are to:

1. Conduct adult and juvenile fish and invertebrate sampling
2. Bottom and mid water trawl surveys
3. Conduct a variety of over-the-side operations (CTDs, plankton tows, mysid tows, deep water sampling, buoy deployment / retrieval, etc.)
4. Conduct Geophysical science, box cores, vibratory coring…
5. Conduct seismic and bathymetric surveys.
6. Conduct operations in the launching, operation, and recovery of ROV's and AUV's

R/V Bay Eagle

The R/V Bay Eagle was designed as a 1980 CamCraft for the purpose of transporting personnel to the oil fields in the Gulf of Mexico. Following its time in the Gulf the Bay Eagle served as a mail transport and passenger vessel to Tangier Island. Purchased in 1986 by VIMS the Bay Eagle was converted for the purpose of Scientific Research.

The 65-foot R/V Bay Eagle is outfitted with a wet lab containing a flow-through seawater system, and a dry lab housing electronics. It has 2 boom winches and redundant hydraulic systems to accommodate a variety of scientific needs and data collections. The R/V Bay Eagle also uses interchangeable stern decks, which increases its versatility when shifting from trawling, to dredging, longlining, or other applications.

The general science mission requirements are to:

1. Conduct adult and juvenile fish and invertebrate sampling by means of long line, trawls, and dredging.
2. Bottom and mid water trawl surveys
3. Conduct a variety of over-the-side operations (CTDs, plankton tows, mysid tows, deep water sampling, buoy deployment / retrieval, etc.)
4. Conduct operations in the launching, operation, and recovery of ROV's and AUV's

R/V Tidewater

The 43-foot R/V Tidewater was added to the Institute's research vessel fleet in May 2013.

The R/V Tidewater features a hydraulic A-frame for deploying trawl nets and other sampling equipment, an open rear deck for efficient sampling, and a separate enclosed space for lab work. The vessel is capable of speeds up to 18 knots and is equipped with top-of-the-line electronics.

The R/V Tidewater replaced the 29-foot R/V Fish Hawk as the primary platform for VIMS Juvenile Fish Abundance Survey. The R/V Tidewater's design and capabilities allow broader use of the vessel beyond the trawl survey, helping the VIMS community accomplish whatever tasks are needed to serve the Commonwealth.

R/V Tyndall Pointe

The 36-foot Carolina Yacht R/V Tyndall Pointe is primarily utilized for outreach and education. As such the vessels hold a Certificate of Inspection as a Passenger Vessel from the USCG.

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1.2 Safety, Security, Environmental Policy

VIMS Marine Operations is committed to compliance with all Federal, State, and Local Laws and Regulations. Any non-compliance or violation of a Federal, State, or Local law should be promptly reported to the vessel Master and / or Designated Person Ashore. All shipboard policies and procedures shall be continually reviewed by vessel Masters, Crew, and Designated Person(s) Ashore, as well as outside sources where needed to ensure compliance with applicable Federal, State, and Local laws and regulations.

The methods used for reviewing and setting objectives relies on various sources, including:

1. The International Safety Management (ISM) Code.
2. The International Ship and Port Security (ISPS) Code.
3. Other mandatory rules and regulations such as STCW, etc.
4. Applicable codes, guidelines and standards recommended by IMO, U.S. Coast Guard, American Bureau of Shipping and other maritime industry organizations.
5. William & Mary and The Virginia Institute of Marine Operations policies and procedures.
6. The significant safety and environmental aspects of our operations.
7. The increased global threats of terrorist attacks.
8. The views of interested parties.
9. Technological options.
10. Financial, operational, and business requirements.

Our procedures clearly define the responsibilities and roles for personnel who are involved in VIMS Marine Operations.

Safety Management Manual (SMM) - A documented management system is maintained in accordance with the requirements of the ISM Code. The Safety Management Manual (SMM) is arranged into sections defined by the Table of Contents. It is arranged to coincide with the elements of the ISM Code.

Management System Procedures - The balance of documentation contained within our management system is the coordinated effort of various individuals and departments within our operations. We believe that this adequately describes our operations regarding safety, security, and pollution prevention and that these procedures provide the support necessary to satisfy our policy.

This document contains common procedures and work instructions throughout our operation and across our fleet of vessel. A hard copy of this manual shall be maintained in the wheelhouse of the vessel, and a stored electronic copy shall be maintained on the vessels **Computerized Maintenance Management Software (CMMS)** system, and shall be accessible to all who are effected by the contents of the document, which shall include all responsible persons, crew, shore based personnel associated with the vessel, and chartering individuals who request access to the document. It will be the responsibility of the Designated Person Ashore to make available this document and distribute it as he /she deems necessary and to whom.

Any revisions to the manual will be certified and logged in to the revisions page.

External References - The following are external references used in developing the Safety Management Systems and documentation:

1. The International Management Code for the Safe Operation of Ships and for Pollution Prevention, also known as the International Safety Management (ISM) Code, International Maritime Organization (IMO) Resolution A.741(18), adopted 4 November 1993 and amended by IMO Resolution MSC.104(73) on 5 December 2000.
2. The International Code for the Security of Ships and of Port Facilities, Parts A and B, also known as the ISPS Code. IMO Resolution 2, adopted on 13 December 2002.
3. United States Coast Guard Navigation and Inspection Circular (NVIC) 11-93 Change 3, Applicability of Tonnage Measurement Systems to U.S. Flag Vessels.
4. United States Coast Guard Navigation and Inspection Circular (NVIC) 10-02, Security Guidelines for Vessels.
5. International Convention for the Safety of Life at Sea (SOLAS 74), as amended.
6. International Convention on Standards of Training, Certification and Watchkeeping (STCW) for Seafarers, as amended.
7. International Convention for the Prevention of Pollution from Ships (MARPOL 73/78), as amended.

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1.3 Definitions

Purpose

The purpose of this section is to define words, abbreviations and acronyms used in this manual.

Definitions

Administration – The Government of the State whose flag the ship is entitled to fly.

CAR – Corrective Action Report

Code –International Safety Management Code.

COLREGS 72 – The Convention on International Regulations for Preventing Collisions at Sea, as amended.

Company – The standards and codes refer to the "Company" as the provider of goods and services; the entity endeavoring to have quality systems in place (compliance with ISM). For the purposes of this manual "Company" shall mean the Marine Operations at the Virginia Institute of Marine Science.

Company Spill Coordinator (CSC) – The individual within the company to be contacted in case of a Shipboard Oil Pollution event.

CMMS - Computerized Maintenance Management System

Controlled Document – Documents that are issued as a part of this Safety Management System and are traceable for revision or recall.

Designated Person Ashore (DPA)– The person within the company ashore designated as a link between the vessel and the highest level of management in the company. The "Designated Person Ashore" holds overall responsibility for the operation of VIMS Vessels.

Document – Informational or instructional papers, drawings or data that are released by management for distribution. Documents and data can be in the form of hard copy (paper), electronic or other media.

Document of Compliance (DOC) – A document issued to the Company which complies with the requirements of the ISM Code. A copy of this document must be carried on board the vessel subject to the ISM code that the Company operates.

IMO – The International Maritime Organization.

ISM, ISM Code – The International Management Code for the Safe Operation of Ships and for Pollution Prevention, also known as the International Safety Management (ISM) Code. The ISM Code incorporates elements of the ISO 9000 series and is focused on the safe management and operation of ships and pollution prevention.

ISO – The International Organization for Standardization based in Geneva, Switzerland

ISO 9000 Series – A series of five quality system standards (IS) 9000, 9001, 9002, 9003, 9004) designed to ensure that customer requirements for quality are met.

ISO 9002 – A quality system standard covering production, servicing, and installation.

ISPS Code – The International Code for the Security of Ships and of Port Facilities.

JSA – Job Safety Analysis, the process by assessing the work-related hazards associated with a specific task, in which attendance needs to be documented. JSA's will be performed prior to an operation. This process is often referred to as a "Toolbox Talk". See Section 3.

Management – The Director of Marine Operations, his/her duly appointed delegates or, in a given situation, the senior person presents with the authority to make decisions affecting the operation in progress. See "Top Management" below for more details.

Management System – A quality system and/or safety management system.

Marine Operations – The department at the Virginia Institute of Marine Science, located at Gloucester Point, Va, dedicated to the operation of the marine fleet and the support of the operation of VIMS Vessels.

MARPOL 73/78 – The International Convention for the Prevention of Pollution from Ships, as amended.

Master – Means the officer who command of a vessel

NCCAR – Non-Conformity / Corrective Action Report. See Section 9.

Near-Misses – A hazardous Occurrence or circumstance that did not result in an injury or damage but certainly had the potential. See Section 9.

New Crewmember – One who has never sailed on a vessel before or has not sailed on a VIMS Vessel within the last 24 months.

Non-Conformity – An observed situation where objective evidence indicates the non-fulfillment of a specified requirement. A Major Non-Conformity is an identifiable deviation which poses a serious threat to personnel or ship safety or a serious risk to the environment and requires immediate corrective action. Also, the lack of effective and systematic implementation of a requirement of the ISM Code is considered a major nonconformity.

Objective Evidence – Quantitative or qualitative information, records or statements of fact pertaining to safety or to the existence and implementation of a SMS element, which is based on observation, measurement, or test and which can be verified.

Observation – A statement of fact made during a safety management audit and substantiated by objective evidence.

OJT – On-the-job training.

PI – Principal Investigator

Quality System – A management system designed with the intent of ensuring fulfillment of operational requirements.

RVOC Safety Training Manual – A manual comprised of fourteen chapters written to provide guidance and heighten awareness of both personal safety and vessel safety for seamen and scientists aboard UNOLS vessels, which is oriented towards the crew member.

RVSS - Research Vessel Safety Standards – A systematic and independent examination to determine whether the SMS activities and related results comply with planned arrangements, and whether these arrangements are implemented effectively and are suitable to achieve stated objectives.

Safety Management Certificate (SMC) – A document issued to a ship that signifies the Company and its shipboard management operate in accordance with the approved SMS.

Safety Management Manual (SMM) – A compilation of policies, procedures and documents that define the Company's methods for developing and maintaining systems for quality, safety and environmental protection in accordance with the ISM Code. The manual forms the basis of a Safety Management System.

Safety Management System (SMS) – A structured and documented system enabling Institute personnel to effectively implement the Safety and Environmental Protection Policy. Mention of the SMS in this manual shall mean the "safety management and environmental protection system" employed by VIMS Marine Operations.

Safety Meetings – Formal gatherings, held at a minimum quarterly, to discuss safety related topics, and or operations. Attendance of these meetings is documented. See Section 7.

Scientific Personnel - This term means those persons who are aboard an oceanographic research vessel solely for the purpose of engaging in scientific research, or in instructing, or receiving instruction, in oceanography or limnology, and shall not be considered seamen under the provisions of Title 46, United States Code. Scientific Personnel do not have any responsibilities on the Station Bill

Standing Orders – Are written by the Master and define the Master's orders for the safe operation of the ship's bridge. The standing orders are a set of guidelines to ensure safe ship navigation and operations whether at sea or at port.

Shipboard Oil Pollution Emergency Plan (SOPEP) – The oil pollution emergency plan required by Regulation 26 of Annex 1 of the International Convention of Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978.

SOLAS – The International Convention for the Safety of Life at Sea, as amended.

STCW 2010 – The International Convention on Standards of Training, Certification and Watch-keeping for Seafarers, as amended.

System – In this manual means the VIMS Marine Operations quality and safety management system, including environmental protection measures when used in the context of describing or referring to a management system.

Top Management – The SMM recognizes that the chain of command of the Director of Marine Operations to the Chief Operations Officer and the Dean of the Virginia Institute of Marine Science.

Traceability: The ability to identify and track documents from the point of issue to the recipient for revision or recall.

Institute – In this manual, refers to the Virginia Institute of Marine Science of which the Marine Operations Department is the vessel-operating branch. For the purpose of this system, Marine Operations is considered a separate and distinct entity.

University National Oceanographic Laboratory System (UNOLS) – A group of academic institutions and National Laboratories organized for the purpose of providing support and recommendations for the oceanographic community and Federal agencies on all aspects of oceanographic research infrastructure, to include the coordinating oceanographic ships' schedules, research facilities, and enhancing the nation's oceanographic program.

Vessel Crew - Crewmember means all persons carried on board the vessel to provide navigation and maintenance of the vessel, its machinery, systems, and arrangements essential for propulsion and safe navigation or to provide services for other persons on board. Vessel Crew also have duties assigned on a station bill in the event of an emergency.

VIMS – The Virginia Institute of Marine Science.

VSO – The Vessel Security Officer under the ISPS Code.

Web – The worldwide web, the Internet.

Note: Definitions for some words and terms are given in relevant sections of this manual.

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Section 2: Safety and Environmental Policy

2.1 Environmental Health and Safety Policies

Purpose

The purpose of this procedure is to establish the Safety and Environmental policy for VIMS Marine Operations.

General

The Safety and Environmental Protection Policy is directed at the shipboard operations of all VIMS Vessels, managed, and operated by Marine Operations of the Virginia Institute of Marine Science (VIMS) and is as consistent and in keeping as much as possible with both William & Mary's Environmental Health and Safety Policy, and the Occupational Health and Safety Plan of VIMS. This policy has been implemented and is maintained throughout Marine Operations, both for the vessels, and for shoreside operations.

Environmental Policy

The Safety and Environmental Policy of Marine Operations was established to maintain a safe working environment for all crewmembers, technicians, scientists, visitors, and equipment. To accomplish this policy a Safety Management System has been provided to include safe practices procedures and training, environmental consciousness, the timely dissemination of information and access to recognize standards.

The intent of this policy is to operate VIMS vessels in such a manner as to have minimal impact on the environment in general and the marine environment in particular. Within this policy the shoreside support of Marine Operations and the crew of the Institute's vessels strive to comply with all applicable national and international regulations regarding vessel operations.

In complying with these regulations, Marine Operations employees maintain documented procedures regarding disposal of waste and comply with voluntary and mandatory reporting standards set forth for ballast management, as applicable. All vessels are operated to prevent the spillage or discharge of oil or hazardous materials into the marine environment and initiate timely and adequate responses to mitigate discharges.

We are committed to continually improve the effectiveness of our Safety Management System and the skills of all personnel, including preparing for emergencies and security incidents, through the establishment of safeguards against identified risks.

Safety Management Manual

Safety and Environmental Protection Policy

Marine Operations Will Maintain a Safe Working Environment Through:

Safe Practices, Procedures, Training, Environmental Consciousness, and Professionalism

Timothy R. Kirkpatrick — Digitally signed by Timothy R. Kirkpatrick Date: 2024.01.22 12:09:26 -05'00'

Timothy R. Kirkpatrick

Marine Safety Officer

Timothy N Turner — Digitally signed by Timothy N Turner Date: 2024.01.23 08:27:26 -05'00'

Tim N. Turner

Director of Marine Operations

Joseph Martinez — Digitally signed by Joseph Martinez Date: 2024.01.23 08:40:27 -05'00'

Joseph Martinez

Chief Operations Officer

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2.2 Infectious Disease Prevention & Response Policy

Purpose

The purpose of this policy is to identify and to best prevent the introduction and spread of infectious diseases aboard VIMS vessels.

Scope

This policy intends to address the precautions that should be taken to prevent the introduction of an infectious disease onboard VIMS vessels. It shall also establish response procedures in the event of an outbreak on board the vessel.

Due to the varying nature of infectious diseases should a public health emergency develop (local epidemic or global pandemic), then a response plan will be developed that can more effectively respond to the varying threats of the situation and will serve to supplement the guidelines established in this policy.

Definitions

Infectious Diseases - Illnesses caused by germs (such as bacteria, viruses, and fungi) that enter the body, multiply, and can cause an infection.

1. Some infectious diseases are contagious (or communicable), that is, spread from one person to another.
2. Other infectious diseases can be spread by germs carried in air, water, food, or soil. They can also be spread by vectors (like biting insects) or by animals.
3. In the event of returning from a foreign port, and as per 33 CFR 160.216, an infectious disease can constitute a hazardous occurrence that can affect the seaworthiness of the vessel and must be reported to the USCG as per the **Marine Casualty / Incident Reporting**.

Emerging - infections that have increased recently or are threatening to increase in the near future. These infections could be.

1. Completely new (like SARS).
2. Reappearing in an area (like dengue in south Florida).
3. Old infections that have become resistant to antibiotics.

Epidemic - refers to an increase, often sudden, in the number of cases of a disease above what is normally expected in that population in that area. Outbreak carries the same definition of epidemic but is often used for a more limited geographic area. For the purpose of this policy **Outbreak** will be used to indicate the introduction of an infectious disease on board the vessel.

Pandemic - refers to an epidemic that has spread over several countries or continents, usually affecting a large number of people. Epidemics occur when an agent and susceptible hosts are present in adequate numbers, and the agent can be effectively conveyed from a source to the susceptible hosts.

Responsibilities

VIMS William & Mary Virginia Institute of Marine Science	2.2 Infectious Disease Prevention & Response Policy	
Marine Ops:	Originator:	Approved By:
Safety Management System	T. R. Kirkpatrick	Tim N. Turner

It shall be the responsibility of the Director of Marine Operations to provide support in preventing the introduction of disease onto Institute vessels. The Director will communicate with all chartering parties prior to mobilizing for a cruise and provide them with a health assessment questionnaire. Any information that could be cause for concern (such as travel to an area effected by an epidemic, or medical history of diagnosis of an infectious disease, etc.) will be communicated to the Master.

Should an epidemic / pandemic public health emergency develop, it shall be the responsibility of the Director to gather all available information regarding the nature of the disease(s) and to develop a response plan following the recommendations by the governing authorities (State Health Dept., USCG, CDC, etc.). It will then be the responsibility of the DPA to ensure that the response plan is provided to the Master and to the chartering parties.

The Director shall provide any necessary supplies (cleaning agents, PPE, etc.), or provide any support (medical response, testing, etc.) as deemed necessary by this policy, and any developed response plan, to prevent an outbreak, or to respond in the event of an outbreak or declaration of an epidemic / pandemic.

It shall be the responsibility of the Master to familiarize him / herself with this policy, or any developed response plan, and to train both crew and chartering parties in its content. The Master will inform the Director of what support / supplies are needed in a response to help prevent and respond to an outbreak. The Master will further be responsible for leading all shipboard personnel in the implementation of this policy.

It shall be the responsibility of the crew and chartering party to assist in the implementation of these preventative measures, including cleaning and sanitation, monitoring their own exposure, educating themselves on the nature of any declared epidemic / pandemic, and taking every precaution to protect themselves and others from contracting the disease.

General

The best means to combat Infectious Diseases aboard any vessel is prevention. It is recognized that once a communicable disease enters a vessel it is very difficult to contain. As such, it is important to attempt to control the potential for an outbreak prior to crewing the vessel.

Onboard general practices to help prevent the spread of disease shall include:

1. Provide all chartering parties with a health assessment questionnaire to help determine if an individual arriving at the vessel may present a risk of introducing an infectious disease.
2. Practice good hand hygiene with frequent and sufficiently long handwashing as recommended by the CDC, (for further information see, https://www.cdc.gov/handwashing/index.html).
3. Cover coughs and sneezes and wash your hands after episodes as appropriate.
4. Ensure all surfaces, especially hard surfaces, are cleaned frequently with approved bleach, alcohol, or peroxide based solutions.
5. Ensure that hand sanitizer is available on the vessel to make it easy to clean hands.
6. If docked in a port where a known outbreak, or during a period of declared epidemic / pandemic, all visits ashore shall be restricted, unless deemed necessary by the Master to conduct the business of the vessel / scientific operations.

In the event of an outbreak onboard the vessel:

1. The DPA will be notified.
2. Per the Master's discretion person(s) effected may be quarantined in a stateroom until transported to shore. Meals will be provided to the individual, as well as whatever means to make their quarantine as comfortable as possible (entertainment, access to internet, etc.)
3. At the Master's Discretion, additional PPE (masks, gloves, face shields) may be required.
4. All personnel will have their temperatures monitored and recorded daily.
5. A thorough cleaning of the vessel will be conducted, cleaning with approved bleach, alcohol, or peroxide based solutions.
6. Personnel will be required to self-monitor for signs and symptoms.
7. The Master will make every attempt to transport the effected individual(s) to shore, using his / her discretion as to the quickest and safest means possible.
8. The Master and DPA will determine what additional response will be required depending on the outbreak's circumstances (medical evaluation, professional cleaning/ disinfecting, quarantining crew/personal, cruise termination, etc.).

In a declared public health emergency, such as an epidemic/ pandemic, the Director will develop a response plan that may introduce further precautions into this policy. That response plan will be maintained on the vessel and will be implemented by the Master.

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2.3 Drug and Alcohol Policy

Marine Operations is a drug free work zone. The possession of illegal substances onboard Marine Operations Vessels is strictly prohibited. Marine Operations has adopted a Zero Tolerance policy regarding drugs and alcohol. Violation of this policy may result in personnel removal from vessel, and / or termination of operations.

Purpose

The purpose of this procedure is to establish a Drug and Alcohol Policy.

General

The Virginia Institute of Marine Science and William & Mary are committed to ensuring a safe and healthy work environment for all employees, students, customers, and the public by maintaining a workplace that is free of drug and alcohol abuse.

1. **Drug and Alcohol Policy**

   William & Mary and the Virginia Institute of Marine Science is committed to maintaining a drug and alcohol-free workplace and a safe and healthy work environment for all employees. Consequently, all employees or personnel embarked are prohibited from engaging in the unlawful manufacture, distribution, dispensing, possession, or use of drugs or controlled substances on board Institute vessels. The ability to perform vessel and scientific operations can be compromised by legal drugs. Both over-the-counter medications as well as prescription medications are known to impair performance.

   Persons using prescription medications and who will be involved in performing vessel and scientific operations should not perform a safety sensitive function on the vessel while under the influence of any substance that may negatively impact their performance. The USCG (NVIC 04-08, Encl. 3 Ch.6) strongly warns that some prescription medications, over-the-counter medications, vitamins, and dietary supplements, alone or in combination with other substances, may adversely affect an individual's ability to perform critical functions and place the individual at risk of sudden incapacitation. Vessel and Scientific personnel are strongly advised to seek the advice of a physician before taking any medications, vitamins, or dietary supplements. Further, all personnel should read and follow the manufacturer's warnings and directions, as well as the warnings and directions of their own physicians, to minimize the risk of adverse effects.

   In the event a "serious marine incident" (as defined in 46 Code of Federal Regulations Parts 4.03, 4.05 and 4.06, and the **Marine Casualty / Incident Reporting** of this manual), the U.S. Coast Guard and other law enforcement officers have the authority to require crewmembers and all embarked personnel, (including scientific personnel), to submit to drug and alcohol testing.

   In order to participate on a voyage aboard Institute vessels, personnel must acknowledge their compliance with William and Mary, Virginia Institute of Marine Science, and USCG drug and alcohol policies.

VIMS | William & Mary Virginia Institute of Marine Science	2.3 Drug and Alcohol Policy	
Marine Ops:	Originator:	Approved By:
Safety Management System	T. R. Kirkpatrick	Tim N. Turner

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2.4 Tobacco / Vaping Policy

Purpose

The purpose of this procedure is to set forth a policy for tobacco and vape use on the vessel.

Scope

The Virginia Institute of Marine Science has a Non-smoking Policy. This policy covers all building spaces associated with Marine Operations. Smoking is permitted in designated areas during designated times on the research vessel based on approval by the Master. For the purpose of this policy all tobacco use restrictions also apply to the practice of vaping.

General

The use of tobacco and / or vaping products is not allowed anywhere within the interior spaces of vessels managed or operated by Marine Operations. The tobacco / vaping restrictions are as follows:

1. Tobacco use and vaping is permitted only on open decks in spaces designated by the Master.
2. The Master has the authority to restrict the use of tobacco or vape at any time at his / her discretion.
3. Should any person on the vessel feel that another's use of tobacco is affecting their personal space and health, they have the right to approach the Master regarding their concern. It shall be the Master's discretion to resolve the situation as the Master sees fit.
4. Any waste, including cigarette butts, which is generated from the use of tobacco / vape, shall be disposed of properly.
    a. Cigarette butts shall be disposed of by means of extinguishing the butt in water, preferably a disposable capped container with water in it, then thrown away.

       AT NO TIME SHOULD ANY CIGARETTE BUTTS BE THROWN OVERBOARD.

    b. Should any waste generated from tobacco / vape use be improperly discarded or become a nuisance, the Master may ban all use of tobacco / vape on the vessel.

Exceptions to this policy are at the discretion of the Master but will not contradict of William and Mary / VIMS policies.

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2.5 Discrimination, Harassment, Retaliation, and Sexual Misconduct Policy

Purpose

The purpose of this section is to set forth the discrimination, harassment, retaliation, and sexual misconduct policy on board VIMS vessels.

References

1. William and Mary discrimination, harassment, retaliation, and sexual misconduct policy: https://www.wm.edu/offices/ce/policies/audit-risk-and-compliance/discrimination.php,
2. UNOLS 6.3.3 Personal Behavior and Sexual Harassment
3. UNOLS 6.5.1 American with Disabilities Act
4. UNOLS Research Vessel Safety Standards, Appendix 'E'
5. SOCP (Ship Operations Cooperative Program), Best Practices on the Prevention of Sexual Assault and Sexual Harassment in the U.S. Merchant Marine: www.socp.us/article.html?aid=211

Definitions

Non-Discrimination – Means that the company has created an environment and culture free from discrimination based on any personal factor unrelated to qualifications or performance. Such "irrelevant personal factors" include (without limitation) race or color, citizenship, national origin or ethnicity, ancestry, religion or creed, political affiliation or belief, age, sex or sexual orientation, gender identity or expression, physical or mental disability, marital status, pregnancy status, parental status, height, weight, military service, veteran status, caretaker status, or family medical or genetic information.

Discrimination - is conduct based on any irrelevant personal factor that,

1. Adversely affects a term or condition of an individual's employment, or participation in a vessel activity, or

2. Is used as a factor in a decision affecting an individual's employment, or participation in a vessel activity, or

3. Constitutes harassment that creates a hostile environment or quid pro quo sexual harassment, each as explained below.

Disability Discrimination - occurs when an employer treats a qualified job applicant or employee unfavorably because of a disability, or a history of a disability, or because the applicant or employee is perceived to have a physical or mental impairment that is not transitory (lasting less than six months) and minor.

Harassment - is unwelcome conduct based on an irrelevant personal factor. Harassment violates this policy when it creates a hostile environment. A hostile environment exists when harassment has the purpose or effect of unreasonably interfering with a person's work or participation in a vessel activity

or is sufficiently severe or pervasive to create an intimidating, hostile, or offensive work or educational environment.

Each situation must be considered in context to determine if harassment has occurred. Conduct alleged to constitute harassment is evaluated from the perspective of a reasonable person.

Sexual harassment - is harassment based on sex. Sexual harassment can take the form of hostile environment harassment, discussed above, or "quid pro quo" harassment. A hostile environment can arise from sexual harassment even if the conduct is not sexual in nature, so long as the conduct is based on sex. For example, a female supervisor who regularly and severely criticizes her male employees because she prefers working with women is harassing her male employees because of their sex, even if the supervisor has no sexual or romantic interest in any of the employees and is not engaging in sexual conduct.

Sexual harassment can occur between persons of the same sex or members of different sexes.

Quid pro quo sexual harassment - Quid pro quo is a Latin phrase meaning "this for that." Quid pro quo is unwelcome conduct of a sexual nature, including sexual violence, when:

1. submission to such conduct is made or threatened to be made a term or condition of employment, or participation in a vessel activity; or,

2. submission to or rejection of such conduct is used or threatened to be used as a factor in a decision affecting employment, or participation in a vessel activity.

Quid pro quo sexual harassment most often occurs when one person has power or authority over another.

Sexual Violence and **Sexual Misconduct** - are physical acts made against someone's will or without their consent. Sexual violence and sexual misconduct take different forms, and often constitute sexual harassment.

Retaliation - Retaliation prohibited by this policy is **Adverse Action** taken against a person for engaging in **Protected Activity**.

1. **Adverse Action** - include firing, denial of a promotion, lowering a grade, unjustified negative performance evaluations and reports, increased supervision or scrutiny, sudden enforcement of previously unenforced policies, exclusion from activities or privileges open to others, or any other action that would deter a reasonable person in the same circumstances from filing a complaint or engaging in protected activity.

2. **Protected Activity** - is when a person opposes, reports, or complains about discrimination, such as by reporting harassment. Adverse action against an employee or student based on their

relationship or association with another person who engages in protected activity is also prohibited retaliation.

General

As property of William & Mary, and The Virginia Institute of Marine Science, any persons on board Institute vessels are also subject to the College's discrimination and harassment policies, as well as the policies set forth in this procedure.

This policy is written in accordance with the policies of William & Mary and VIMS. However, due to the nature of the vessel's work, this document is intended to supplement the existing policy. For reference to the William & Mary policy please see:

www.wm.edu/offices/compliance/policies/discrimination_harassment_retaliation/policy

All crew and scientific staff, employed by William & Mary / VIMS, will participate in Sexual Harassment Training, as per University policy, prior to sailing. Any chartering party will be briefed on this policy as a part of the vessel non-crew orientation prior to sailing. Further, appropriate literature will always be posted and maintained on the vessel regarding this policy.

Discrimination, Harassment, Retaliation & Sexual Misconduct Policy

William & Mary, and The Virginia Institute of Marine Science, are dedicated to promoting and fostering a safe environment for all students, staff, and faculty. As an employer and educational / research institution, William & Mary and VIMS have a responsibility to take reasonable steps to eliminate discrimination, sexual harassment / sexual violence, and retaliation practices. As well as to prevent their recurrence and address their effects.

The office charged with investigating complaints of harassment is the Compliance and Equity Office and access to the universities Title IX Coordinator can be found in the reporting contacts below.

The social atmosphere at sea, where individuals live with one another in close quarters 24/7, is vastly different from that onshore. When people work and live close to prolonged periods of time, personal and professional boundaries may become blurred, privacy is greatly reduced, and interactions can become more intense, intentionally, or not. When in these situations, anyone may be subject to more excessive personal attention, welcomed or un-welcomed, than might be experienced in a more typical work situation. As such, individuals are encouraged to recognize the unique circumstances of shipboard life and to take practical steps to prevent sexual harassment from occurring.

Because complaints are most effectively resolved at the earliest stages, individuals are greatly encouraged to report concerns or complaints regarding sexual harassment as early as possible.

William & Mary will respond promptly and effectively to any reports of discrimination and sexual harassment, and will take appropriate action to prevent, to correct, and if necessary, to discipline behavior

that violates this policy. At sea, reports of sexual harassment should be brought to the chief scientist, supervisors, and / or the Master, who will take the appropriate steps to correct the situation.

William & Mary takes action to protect individuals from retaliation and to address any retaliatory behavior that occurs. If a person fears that retaliation may be a factor in their reporting of the incident, then that person may contact the University Title IV Coordinator directly.

Personnel are also reminded of the ethical considerations when engaging in a consensual relationship that may present a conflict of interest, and may also be governed by policy, including the Consensual Amorous Relationships policy (governing relationships between supervisors with staff, and faculty / staff with students). For more information follow the following link:

www.wm.edu/offices/deanofstudents/services/communityvalues/studenthandbook/student_life_policies/consensual_relationships/index.php.

More information on all of these policies may be found at the:

www.wm.edu/offices/compliance/policies/discrimination_harassment_retaliation/policy

Reporting Procedures while at Sea with limited communication

Any person who experiences discrimination or harassment is encouraged to report the incident to their Chief Scientist/Primary Investigator or Vessel Master if appropriate. They are responsible for maintaining the welfare of the ship, working, and learning environment, free of discrimination and harassment.

If an individual feels unsafe reporting to their supervisor or the Master of the vessel, they can request to use the ships communication systems and report the incident to the Designated Person Ashore, or directly to the William & Mary Compliance and Equity Office, Title IX Coordinator.

If an individual feels that they need to talk to someone regarding sexual harassment / assault, but are not sure that they want to trigger the legal reporting process, then they may contact Rape, Abuse, and Incest National Network (RAINN): www.rainn.org

Any problems or questions regarding the vessel or any experience on board, individuals are encouraged to discuss these concerns with the Master or the Designated Person Ashore.

Reporting Contacts

Director of Marine Operations
Tim N. Turner
Virginia Institute of Marine Science, Marine Operations
1280 Franklin Road
Gloucester Point, VA 23062
tnturner@vims.edu

Work: (804) 684-7279

William and Mary Title Nine Coordinator
Pamela Mason J.D., CCEP
Chief Compliance Officer
William and Mary
109 James Blair Hall
Williamsburg, VA 23185
757-221-3146
reportconcern@wm.edu

Rape, Abuse, and Incest National Network (RAINN)
www.rainn.org
(800) 656-HOPE (4673)

Other reporting options are detailed in:

The university has resources available for students and employees who experience discrimination or who have questions or concerns about discrimination. Resources range from counseling to protections against retaliation and other interim measures that may be taken. The university also has several ways to report or file a complaint of discrimination or retaliation. Information about these resources and reporting options is provided in:

www.wm.edu/offices/compliance/policies/discrimination_harassment_retaliation/policy/appendix_a.

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Section 3: Responsibilities and Authorities

3.1 Responsibilities and Authorities

Purpose

The purpose of this procedure is to identify the responsibility, authority and interrelation of all personnel who manage, perform, and verify work relating to VIMS vessels.

General

In general, safety is the responsibility of all people. The Director of Marine Operations and the Marine Safety Officer are the designated Safety Coordinators for Marine Operations. According to the direction of the Director of Marine Operations, it is the responsibility of the vessel Master to maintain the vessel in a safe condition.

The Director of Marine Operations will act as the Designated Person Ashore (DPA). The Director of Marine Operations may designate an individual as the DPA at his/her discretion.

The Marine Operations office manages the day-to-day operations of the vessel. The Director of Marine Operations is responsible for ensuring resources and shore-based support are provided to enable the vessel to be operated adequately and safely. The Director of Marine Operations reports to VIMS's Chief Operations Officer and the Dean/Director of the Institute. The Chief Operations Officer and Dean/Director of the Institute are defined as top management in that the director reports to them for administrative purposes.

Nonetheless, the Director of Marine Operations is responsible for the establishment and implementation of the **Environmental Health and Safety Policies**, and ensuring adequate resources for the Safety Management System in support of these policies. The Director of Marine Operations and marine staff will conduct the annual Management Review as per **SMF 12.2 Internal Audits** of this manual.

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3.2 Management Commitment

Purpose

The purpose of this section is to define management's commitment to this document and the vessel's Safety Management System.

General

Top management is committed to the consistent implementation of our Safety Management System and to continually improving its effectiveness. This commitment is demonstrated through:

1. The continuous communication to all personnel, both ashore and shipboard, of VIMS's Marine Operations Safety and Environmental Protection Policy and the importance of meeting statutory and regulatory requirements.
2. Ensuring that safety, security, and environmental objectives are established and maintained.
3. Conducting management reviews.
4. Ensuring the availability of resources.

The Management System may be added to or modified based upon any new developments or requirements in our day-to-day operations or external regulations. This system is implemented to meet documented objectives but is also designed to be available for control of safety, security, environmental, or other issues at the discretion of management.

The implementation, control, and maintenance of the management system is controlled and supported by documentation to meet specified requirements of the ISM Code and other regulatory requirements.

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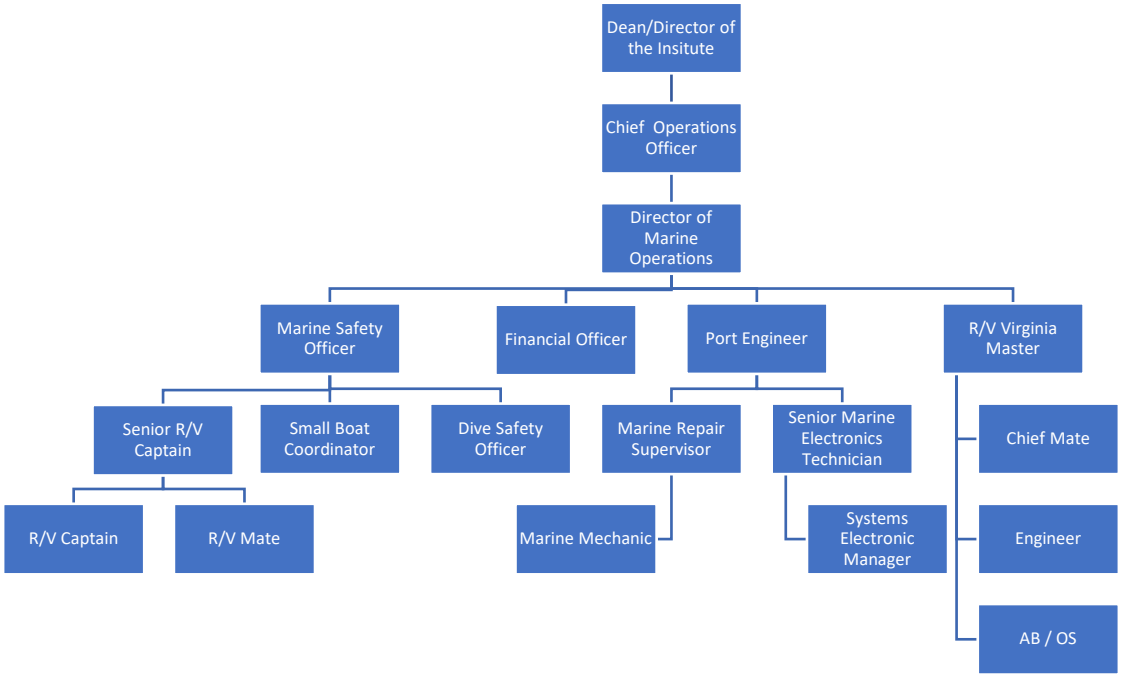
3.3 Organizational Flow Chart



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3.4 Risk Assessment / Job Safety Analysis (JSA)

Purpose

The purpose of the procedure is to set forth a Risk Assessment and Job Safety Analysis (JSA) program aboard VIMS vessels.

Scope

This program is intended to enhance safety at sea, prevention of human injury or loss of life, and avoidance of damage to the environment, to the marine environment and to property. Risk Assessment / Job Safety Analysis is intended to be an ongoing and continuous process that can effectively address the risk of both routine and non-routine operations, engendering a culture of safety so that the assessment of potential hazards becomes second nature.

Risk assessment, in some form, applies to all activities onboard or associated with Marine Operations. The degree of assessment necessary depends on:

1. The perceived dangers.
2. The likelihood of an incident.
3. And the severity of the results of an incident.

This procedure attempts to categorize activities and provide an assessment method for dealing with routine activities with an amount of risk or unusual activities not often encountered.

Definitions

Risk Assessment - Risk Assessment is a process that includes identifying hazards and analyzing or evaluating the risk associated with those hazards to determine if existing controls are adequate, or if additional controls to eliminate or reduce the risk to an acceptable level are needed. Risk Assessment should consider risk to human life or well-being, environmental protection, and the risk to damaging equipment.

Job Safety Analysis (JSA) - The process by which an employee assesses the work-related hazards associated with a specific task, as reviewed in the Risk Assessment, and then determines if there are any administrative or engineering controls that will mitigate any of the hazards. A JSA also reviews what personal protective equipment (PPE) will be required to prevent injury.

Responsibility

The Master will have overall responsibility for the Risk Assessment / JSA program.

It is the responsibility of each supervisor to ensure that the procedures for the JSA program are adhered to in their department. The following personnel will be responsible for the JSA's in their department (as applicable):

1. Deck: Chief Mate

2. Engineering: Chief Engineer / Master (as applicable)
3. Science Operations: Chief Scientist

Although it is the department head's responsibility to administer the Job Safety Analysis, it is up to every employee to be responsible for their own safety.

General

General activities are separated, for the purpose of this procedure, into various categories as defined below:

1. **Minimal Risk Activities** - Activities for which a detailed risk assessment is unlikely to achieve an improvement in safety due to the limited risks involved, low probability of incident or limited severity of hazards, in which case a Risk Assessment and Job Safety Analysis will not be required.

2. **Routine Activities** - These are operational tasks that are routinely done onboard a vessel. These activities may include routine scheduled maintenance or scientific evolutions. Routine activities include procedures covered in this manual, and so will be required training for new crew members and will not require a Risk Assessment or Job Safety Analysis.

3. **Other Than Routine Activities with an Element of Risk** - These would be operational items that are new to the vessel's crew that have a distinct set of hazards and safeguards than those normally associated with routine operations and equipment. It would also include maintenance and repair activities or other unusual / uncommon activities that involve an amount of risk that should be analyzed prior to commencing the task.

Procedures

A **Risk Assessment** should be conducted by the Master and / or the Chief Scientists during the pre-cruise meeting and should be triggered if it is deemed that:

1. The involved tasks / or evolutions required to perform the scientific objective are not routine to the vessel and pose an element of risk to personnel, the vessel, and / or the environment.
2. Or that the controls of a routine task / evolution have changed so as to elevate the risk to personnel, the vessel, and / or the environment.

The Risk Assessment form **SMF 3.4(a): Risk Assessment** can be found on CMMS. The intention of the process is that the Master and the Chief Scientists will talk through the given task / evolution determining the process in which to accomplish the objective, and to the best of their ability identifying as many risks / hazards as possible.

A Risk Assessment may result in the need to review the Safety Management System Manual, in which case the DPA should be notified, and if deemed necessary then the reference shall be logged and crew training regarding the change should be conducted and logged as well.

A **Job Safety Analysis (JSA)** should be triggered when a procedure for a task or evolution does not exist in the SMM, and:

1. After a Risk Assessment has been conducted and it has been determined that a level of risk has presented itself.
2. Beginning an activity / job / evolution that is not a routine activity and has an element of risk.
3. Beginning an activity / job / evolution that may be routine, but the circumstances or controls regarding the activity have changed.
4. In the event of an Incident of Near Miss (if so, directed by either the Master or DPA as a Corrective Action).
5. Any time that a crewmember / member of the scientific party deems it necessary to conduct a JSA of the activity / job / evolution.

The purpose of the JSA is to implement controls to help mitigate a risk and de-elevate that risk. If a task is deemed to be a high-risk task / evolution (meaning that the likelihood of occurrence is high, and that the severity of the outcome is also high) and the risk cannot be reduced through implemented controls then the Master has the discretion of whether or not to perform that activity.

The form for conducting a JSA can be found on the CMMS. and will prompt the person(s) performing the JSA to define the:

1. Define the Job
2. List the Hazards
3. List the Hazard Controls
    a. List Environmental / Pollution Concerns
    b. List Environmental Pollution Controls
    c. List the Personal Protective Equipment to be required.

All persons participating, or in any way involved with a task / evolution that is covered by a JSA will be trained on that JSA prior to performing the task / evolution. These JSA reviews will be valid for the duration of the cruise but may be required to be reviewed again per the Master's discretion. Reviews of the JSA's shall be logged in the vessel's deck log and in the vessel's, CMMS using form SMF 3.4(b): JSA Review.

Reporting

All Risk Assessments and JSA's shall be logged in the ship's Deck Log, and on the CMMS.

1. Risk Assessments will be completed on SMF 3.4(a): Risk Assessment
2. JSA's will be completed on SMF 3.4(b): Job Safety Analysis
3. Risk Assessment / JSA Reviews will be completed on SMF 3.4(c): JSA Review

Risk Assessments and JSA's shall be printed out and kept in a binder in the wheelhouse. Any revisions to a Risk Assessment or JSA shall be logged in the revisions log, as well as any review of the Risk Assessment / JSA. These records shall be kept for a duration of no less than 5 years.

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Section 4: Designated Person

4.1 Designated Person Ashore

Purpose

The purpose of this procedure is to set forth the individual within the Virginia Institute of Marine Science, Marine Operations, who is considered the "Designated Person Ashore."

Scope

The Safety Management System is required to establish a "Designated Person Ashore (DPA)." The ISM Code reads, "To ensure the safe operation of each ship and to provide a link between the Company and those on board, every Company, as appropriate, should designate a person or persons ashore having direct access to the highest level of management. The responsibility and authority of the designated person or persons should include monitoring the safety and pollution prevention aspects of the operation of each ship and ensuring that adequate resources and shore-based support are applied, as required."

General

The individual determined to be the "Designated Person Ashore" for the Virginia Institute of Marine Science, Marine Operations, is the Director of Marine Operations, or his/her designee. This is the individual who has the responsibility to ensure the safe operation of the ship and who provides the link between the company and those onboard. Each vessel will be required to display the name and contact information of the DPA in a clearly visible area where it can be accessed in case of an emergency.

From time to time the Director of Marine Operations may delegate to members of his staff various tasks associated with the duties of a Designated Person Ashore within the meaning of the ISM Code. In the event of an interim DPA the name and contact information for that designee will be provided to the vessel Master prior to the cruise.

The Director of Marine Operations also has access to the highest level of management when that access is needed. In the event of an emergency/incident in which the DPA is a designee of the DMO, then the DPA will report directly to the DMO and act under the DMO's direction.

During working and non-working hours, the Designated Person Ashore shall be one of the first people notified of a shipboard emergency by shipboard personnel. In his absence, the individual assigned to act on his behalf shall be notified.

The Designated Person will be responsible for the approval and issuance of the Safety Management Manual and any changes made to it. In this position he/she may delegate a coordinator to manage the routine matters associated with the maintenance of this manual.

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Section 5: Master's Responsibilities and Authority

5.1 Master's Responsibilities and Authority

Purpose

The purpose of this procedure is to set forth the Master's responsibilities and authority on VIMS Vessels operated by the Virginia Institute of Marine Science, Marine Operations.

Responsibility

The Master is responsible for:

1. The safe and efficient day-to-day operation of the vessel.
2. Complying with the laws of navigation and the entire body of statutes that regulate ships and seagoing matters.
3. Maintaining the seaworthiness of the vessel and protecting the interests of the Institute.
4. Accomplishing the objective of each cruise as directed by management.
5. Implementing the Safety and Environmental Protection policies of the Safety Management System as defined in this manual.
6. Drills and Training - The Master will ensure that the periodical drills and training are conducted on time and logged accordingly both on the vessel's Computerized Maintenance Management Software (CMMS), as well as in the Deck Log.
7. Motivating the crew in the observation of those policies.
8. Monitoring and reviewing the Safety Management System and reporting any deficiencies to Marine Operations in accordance with other provisions of this manual, utilizing form **SMF 5.1** appended to this manual, and which can be found on the vessel's **Computerized Maintenance Management Software (CMMS)**.

Authority

VIMS Marine Operations ensures that the Master is properly qualified for command and fully conversant with the management system prior to taking command. The Master has the full support of the Director of Marine Operations in performing his duties to ensure that safety, security, and environmental concerns are conducted in accordance with our policies.

The Master is in overall command of all personnel and operations aboard the ship. His / her authority at sea is supreme and overriding. He / she has the authority and responsibility to make decisions with respect to safety, security, and pollution prevention and to request assistance from the Designated Person, Marine Operations, or any other appropriate source.

Policies & Procedures

The Master must support, implement, enforce, and be conversant with the following:

1. Safety Management System (SMS).
2. Safety Management Manual (SMM).
3. International Safety Management (ISM) Code.
4. Oil Pollution Emergency Response Plan.

5. Stability / Ballast Procedures.
6. Waste Management Plan.
7. International and Federal regulations applicable to vessel operations.
8. All applicable state and local regulations.
9. All applicable William and Mary, and VIMS, policies, and procedures.

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Section 6: Resources and Personnel

6.1 Resources

Resources

The Virginia Institute of Marine Science, Marine Operations, provides the resources necessary for the effective implementation and continual improvement of the Safety Management System in order to enhance safety, security, and environmental performance. Resources include suitably qualified and trained personnel, including those trained to perform verification activities. Resources also include equipment, technology, and financial resources.

New hires shall meet all the minimum requirements of the applicable Position Descriptions as approved and maintained by William and Mary Department of Human Resources. All statutory and regulatory requirements must be in force at the time of hire. This task may be delegated to another employee of the VIMS Marine Operations. Such a delegation does not relieve the Director of Marine Operations of the responsibility to ensure that each new hire meets the requirements of the position.

Position descriptions are maintained to identify the prerequisites, with regard to licensing, education, experience, skills, and training, of personnel performing tasks that have an effect on operations of the vessel.

Vessel Personnel

Orientations of shipboard personnel to their duties and those instructions that are essential before sailing have been defined in SMM (**Crewmember Orientation**). At the discretion of the Director of Marine Operations, in consultation with the Master of the vessel, additional training and qualifications may be required depending on the nature of the operations.

English is the language for communication both within and outside the Company. Therefore, information for working within the Safety Management System is established in English.

Responsibility

The responsibility of adequately manning Institute vessels ultimately rests with the Director of Marine Operations, in coordination with the Master of the vessel. It is the responsibility of the Director to ensure that the vessel is staffed with properly qualified individuals. This responsibility requires all necessary professional papers to be adequate and current, and all medical evaluations and required drug testing are completed. It is the responsibility of the Marine Safety Officer to ensure these documents are current and up to date.

The Master is responsible for implementing, monitoring, and reviewing the **Environmental Health and Safety Policies**, **Master's Responsibilities and Authority** of the Safety Management System onboard the vessel (See section 5, **Master's Responsibilities and Authority**, of the SMM).

Management System Awareness Training

VIMS William & Mary Virginia Institute of Marine Science	6.1 Resources	
Marine Ops:	Originator:	Approved By:
Safety Management System	T. R. Kirkpatrick	Tim N. Turner

VIMS Marine Operations supports and requires training in the Safety Management System for all personnel directly associated with the operations of the vessel, at the discretion of the DPA. The Master or his designee ensures training in the Safety Management System for all personnel on board so that personnel in each relevant function and level are aware:

1. Conforming with Safety Management System procedures is mandatory in order to ensure consistency of operations and to facilitate identification of any weaknesses.
2. Of how their work activities may have a significant impact on safety, security, and the environment, whether actual or potential.
3. Of their roles and responsibilities in achieving conformance with Safety Management System policies, procedures and requirements, and the benefits to VIMS and the community within which we operate and their responsibilities for conforming to our policies and procedures.
4. Of their roles and responsibilities in regard to emergency preparedness, security awareness and participation, and response requirements.
5. Of the potential consequences of departure from specified operating procedures and requirements.

All vessel personnel will read and review the current Safety Management Manual annually, based on date of hire. Full-time shoreside personnel will read the following sections annually: 1-4, 9, 12, 13. The review by each person will be documented on **SMF 6.1: Employee Annual Review,** appended to this Manual, which can be found on the vessel's **Computerized Maintenance Management Software (CMMS)**. New employees will complete this review within 30 days of their initial orientation as described in **Crewmember Orientation**

Familiarization Training

Procedures set forth in **SMM 6.2 Crewmember Orientation** have been established, documented, and maintained for ensuring that new personnel and those transferred to new assignments related to safety, security, and protection of the environment, are given proper familiarization of their duties.

Communications

Communications between the vessel and shore staff occurs daily via the Morning Report, or as needed. This communication will be by email when possible, or by phone if necessary.

Records

It is the responsibility of the Marine Safety Officer in coordination with the vessel Master to maintain a system of required recurring training for all employees in the **Computerized Maintenance Management Software (CMMS)** system, and in their personnel file. It is the responsibility of each employee to provide the Marine Operations office with copies of all evidence of completed training whether paid for by the Institute or not. The Master, or his/her designee, shall record all training completed on board the vessel resulting in a recognized qualification and file the checklists in the **Computerized Maintenance Management Software (CMMS)**; copies of all such training records will be available to the Marine Safety Officer.

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6.2 Crewmember Orientation

Purpose

The purpose of this procedure is to set forth the requirements to establish a standard for conducting New Crewmember Orientations aboard VIMS vessels.

Scope

In accordance with the International Standards of Training Certification and Watch standing, prior to getting underway any new crewmembers shall be oriented to the vessel using the Crew-Member Orientation Checklist which complies with STCW standards 46 CFR 15.1105, utilizing form **SMF 6.2: Crew-Member Orientation** which and can be found on the vessels **Computerized Maintenance Management Software (CMMS)**.

Crew Members are defined as holding current USCG issued licenses and are assigned a responsibility on the vessel's Station Bill.

Responsibility

It is the responsibility of the Master of the vessel to establish an orientation program for every new crew member that comes on board the vessel. It is also the responsibility of the Master to maintain that program.

In establishing the orientation program, the Master may delegate the conduct of the orientation to others under his command. Such delegation does not relieve the Master of the responsibility to ensure that each new crewmember receives a proper orientation.

The Master or his designee will review the vessel's Crew-Member Orientation Checklist with the employee.

Copies of licenses, documents and STCW certificates will be maintained by the Marine Safety Officer.

General

It is important that each crewmember be adequately prepared to assume his/her functions on the vessel prior to performing their shipboard duties. The requirements for this familiarization and basic safety training for STCW are contained in 46 CFR 15.1105. These regulations require that this familiarization take place prior to the new individual assuming duties on the vessel.

A new crew member who has never sailed on the vessel, or has not sailed within the last 12 months, must be oriented as per the **SMF 6.2: New Crew Member Orientation**.

All new crew must complete orientation read and become conversant in Section 7 of this manual prior to assuming vessel duties.

The STCW regulations set forth that the following areas must be covered as soon as is possible after arrival to the vessel, but no later than after a duration of 2 weeks (14 days):

1. The ability to communicate with other persons on board about safety matters.
2. Knowledge of what to do if a person falls overboard, if a fire or smoke is detected, or if the fire alarm or abandon-ship alarms sound.
3. Can identify station for muster and embarkation, and emergency escape routes
4. The ability to locate and don a life jacket.
5. The ability to raise the alarm and knowledge of how to use portable fire extinguishers.
6. Can take immediate action upon encountering an accident or other medical emergency before seeking further medical assistance on board.
7. The ability to close and open fire doors, weather tight doors, and watertight doors.
8. Is familiar with the vessel's arrangements, installation, equipment, procedures, and characteristics relevant to his or her routine or emergency duties or responsibilities.

In addition to the requirements of STCW, the orientation should also include an introduction to VIMS specific policies such as smoking, drug and alcohol use, sexual harassment, etc.

All new crew members will be required to fully read and review the vessel's Safety Management Manual within 14 days of crewing on Institute vessels, utilizing form **SMF 6.1 Employee Annual Review** appended to this manual, and which can be found on the vessel's **Computerized Maintenance Management Software (CMMS)** system.

Within 24 hours of any personnel reporting to the vessel for the first time the crew shall conduct a Man Overboard Drill and Abandon Ship Drill.

Reporting

New vessel personnel orientation will be performed using a check-off list to ensure that the required areas are addressed.

Upon completion of the orientation check-off list on the **Computerized Maintenance Management Software (CMMS)**, it shall be approved by the Master. After the Orientation is approved by the Master, then the Marine Safety Officer will be prompted by the CMMS to approve the checklist. The checklist will be stored on the CMMS, and an entry made in the deck log that the orientation was given indicating who conducted the orientation, and who received the orientation.

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6.3 Non-Crewmember Orientation

Purpose

The purpose of this procedure is to establish general guidelines for conducting a safety orientation for non-crewmembers on board VIMS Vessels.

Scope

Every person that comes on board Institute vessels needs to have a very basic knowledge of safety. Every person needs to know what to do for the basic emergency scenarios of fire, abandon ship and man overboard. In addition, that person should know the procedures for reporting an emergency situation.

Non-crewmembers may include researchers, scientists, students, observers, technicians, agency representatives, or others who are directly or indirectly supporting the scientific objectives of the cruise. In essence, any person who does not hold a Merchant Mariner's Credential from the USCG, the foreign equivalent, and / or an STCW endorsement, and does not have a responsibility as defined on the vessel's Station Bill, shall be considered to be non-crewmembers.

Responsibility

It is the responsibility of the Master of the vessel to ensure that non-crewmembers receive basic safety orientation on board their vessel as per the form **SMF 6.3: Non-Crew Member Orientation** appended to this manual and found in the **Computerized Maintenance Management Software (CMMS)** system.

This orientation may be delegated to another member of the crew to conduct. Such delegation does not relieve the Master of the responsibility to ensure that each non-crewmember receives a proper orientation.

General

Before getting underway, or:

1. The Chief Mate or other officer designated by the Master shall conduct a Safety Orientation Lecture for **all** non-crewmembers. The briefing shall include the following elements, at a minimum:
    a. Shipboard policies including:
        i. Environmental Policy
        ii. Drug and Alcohol Policy
        iii. Tobacco / Vape policy
        iv. Discrimination, Harassment, Retaliation Policy
    b. An introduction to safety at sea - The hazards of a moving platform.
    c. Watertight integrity.
    d. Fire prevention.
    e. Emergency response – man overboard, fire, abandon ship.
    f. Life jackets & Immersion (survival) suits.
    g. Requirements for Personal Protective Equipment.
    h. Shipboard drills.

i. General deck safety.
j. Shipboard health and sanitation.

2. Within 24 hours of getting underway the Master shall conduct a fire and boat drill. At this fire and boat drill, all personnel will report to their designated muster station with their life jacket and survival suits and receive instructions in what they are expected to do. This instruction includes:
   a. Where to Muster and what items they need to bring.
   b. How to follow the basic fire instruction.
   c. Each person will be instructed in the basics of abandoning a ship. Such instruction shall include:
      i. Donning of personnel flotation devices and exposure suits.
      ii. It will also include basic instructions for entering life rafts and,
      iii. What to bring should an abandon ship be announced.

As a normal practice, non-crewmembers will receive instruction during other regularly held drills.

Reporting

Non-Crewmember personnel orientation will be performed using a check-off list to ensure that the required areas are addressed.

Upon completion of the orientation check-off list on the **Computerized Maintenance Management Software (CMMS)** system, it shall be approved by the Master. After the Orientation is approved by the Master, then the Marine Safety Officer will be prompted by the CMMS to approve the checklist. The checklist will be stored on the CMMS, and an entry made in the deck log that the orientation was given indicating who conducted the orientation, and who received the orientation.

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6.4 Safety Meetings

Purpose

The purpose of this section is to define the need for and purposes of a Safety Meeting.

Scope

It is understood that safety meetings occur on board VIMS vessels while at sea and in port, and may include the participation of Scientific Personnel and shoreside support. For the purpose of the SMS, Safety Meetings are defined as formal gatherings at which attendance needs to be documented.

General

A Safety Meeting is a general term that can apply to several different situations including:

1. Safety Meetings to review Job Safety Analysis as per the **Risk Assessment / Job Safety Analysis (JSA)** section of this manual.
2. Safety Stand Downs in the event of an accident
3. Safety Stand Down in order to discuss a Near Miss as defined by Annex to MS-MEPC.7/Circ.7 of the ISM Code
4. A review of SMM changes and recommendations
5. Any situation onboard that the Master or DPA deems important enough to call an all hands meeting to discuss and document.

Beyond the above, a shipboard Safety Meeting will be called at the discretion of the Master, no less than quarterly.

Records

The vessels **Computerized Maintenance Management Software (CMMS)** will be used to document Safety Meeting Content and Attendance utilizing form **SMF 6.4: Safety Meetings**. Once the form is completed the Master will be prompted to approve the form, then the Marine Safety Officer will be prompted. The Safety Meeting will be logged in the Ship's Deck Log. These forms will be maintained on the CMMS for a period of at least five years.

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6.5 Qualifications

Purpose

The purpose of this procedure is to set forth standards of training and certification of personnel that are standing navigational watches, conducting engine room checks, operating heavy equipment (cranes and winches in particular), and for operating the small boat, as applicable.

Responsibility

It is the responsibility of the Master of the vessel to establish the criteria used to qualify individuals to operate the vessel's equipment and to perform various underway and in port checks.

In establishing this qualification program, the Master may delegate the conduct of the program to others under his / her command. Such delegation does not relieve the Master of the responsibility to ensure that each individual is qualified to perform the given task. The training will normally be conducted by the Mate, Engineer, or Technician who will direct the practical training and assessing of an operator.

Should a charter party bring on board their own equipment that party may have in place their own qualification system. It shall be the Master's discretion to determine if the qualifications that the charterer has in place for the equipment that is brought on board meets what he / she considers to be adequately safe. Further, the Master may determine that the equipment brought on board is unsafe, and so prohibit the embarking of such equipment on to the vessel.

Reporting

All Qualifications will be performed using a check-off list to ensure that the required areas are addressed and certified.

Upon completion of the Qualification check-off list on the **Computerized Maintenance Management Software (CMMS)**, it shall be approved by the Master. In the case of Engine Room Checks, and Heavy Equipment then the Engineer will approve the check-off list, as well as the Master. After the Qualification is approved by the Master and / or Engineer, then the Marine Safety Officer will be prompted by the CMMS to approve the checklist. The checklist will be stored on the CMMS, and an entry made in the deck log that the orientation was given indicating who conducted the orientation, and who received the orientation.

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6.5.1 Standing a Navigational Watch Qualifications

Purpose

The purpose of this procedure is to establish a standard of competency and training to qualify any licensed operator to operate navigational equipment that is critical to standing a navigational watch.

Qualifications for Standing a Navigational Watch

Prior to assuming a navigational watch, a licensed deck officer must prove competency to the Master.

The Master will use the form SMF 6.5.1 to verify competency.

Reporting

Upon completion of the above requirements to the satisfaction of the Master, form **SMF 6.5.1: Qualifications – Standing a Navigational Watch**, which will be completed on the **Computerized Maintenance Management Software (CMMS)** system, and will be logged in the Deck Log.

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6.5.2 Conducting Engine Room Checks Qualification

Purpose

The purpose of this procedure is to establish a standard of competency and training to qualify any individual that is required to conduct an Engine Room Check as a responsibility of their watch.

Qualifications for Conducting and Engine Room Check

Prior to conducting Engine Room Checks, the watch-stander must be qualified by the Engineer using form SMF 6.5.2. In the case of a vessel that is not required to be manned by a Designated Engineer the crewmember will be oriented either by the Port Engineer, or the Master as delegated by the Port Engineer.

Reporting

Upon completion of the above requirements to the satisfaction of the Master, form **SMF 6.5.2: Qualifications – Conducting Engine Room Rounds**, which will be completed on the **Computerized Maintenance Management Software (CMMS)** system, will be approved by the Master, and will be logged in the Deck Log.

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6.5.3 Heavy Equipment Operation Qualification

Purpose

The purpose of this procedure is to establish a qualification standard for individuals using the vessel's heavy equipment.

General

Only individuals qualified by the Chief Engineer and approved by the Master will be permitted to operate any of the vessel's heavy equipment. In the case of a vessel that is not required to be manned by a Designated Engineer the crewmember will be oriented either by the Port Engineer, or the Master as delegated by the Port Engineer.

For the purpose of this document, heavy equipment is defined as equipment using stored energy (primarily hydraulic) to lift, move, or deploy another object or piece of scientific equipment. This equipment includes, but is not limited to, as other equipment may be shipped on board depending on the mission of the cruise:

1. A-Frame Crane
2. J-Frame Crane
3. Trawl Winches
4. Trawl Net Reel
5. Deck Crane
6. Anchor Windlass

Heavy Equipment Qualification

Heavy Equipment Qualification checklists will be logged on the vessel's **Computerized Maintenance Management Software (CMMS)** system and will be approved by the Master. Training on the vessel's heavy equipment operation, and safety precautions / PPE for personnel working around the heavy equipment, will be conducted annually, and logged in the CMMS.

Operation of Heavy Equipment will take into consideration criteria outlined in the associated JSA's.

Reporting

Upon completion of the above requirements to the satisfaction of the Chief Engineer, form **SMF 6.5.3: Qualifications – Heavy Equipment Operator** will be completed in the **Computerized Maintenance Management Software (CMMS)** to be approved by the Master, and the qualification shall be logged in the Deck Log.

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6.5.4 Small Boat Handler Qualifications

Purpose

The purpose of this procedure is to establish a qualification standard for individuals using the vessel's small boat (as applicable).

Qualification

To become recognized as a qualified small boat operator, the individual shall:

1. Understand the use and care of the equipment and the operations from pre-launch to recovery and securing.
2. Receive practical training that includes observation of all aspects of the operation with qualified operators, then operating with a qualified operator supervising until the trainee is ready to solo. Readiness to solo is determined by the Chief Mate and approved by the Master.
3. Perform a practical test to demonstrate satisfactory operation of the boat.

Note: The Master and the Chief Mate reserve the right to revoke any operator's certification if, in the opinion of either, an operator is in violation of safety standards or operating the boat in a manner which endangers personnel.

Reporting

Upon completion of the above requirements to the satisfaction of the Chief Mate, "Small Boat Operator" Qualification **SMF 6.5.4: Qualifications – Small Boat Operator**, which will be completed on the **Computerized Maintenance Management Software (CMMS)** system and approved by the Master. The qualification will be logged in the Deck Log.

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6.6 Computerized Maintenance Management Software (CMMS)

Purpose

The purpose of this procedure is to define the role of the Computerized Maintenance Management System (CMMS), and the responsibilities of personnel to maintain the system.

Responsibilities

It is the overall responsibility of the Master to oversee the implementation and maintenance of the CMMS System. The Master may delegate this task, or aspects of this task to various personnel, in particular to the Mate or Engineer to maintain the aspects of the system that pertain to their duties and work. However, this does not alleviate the Master of his responsibility to maintain the CMMS System as a means of record keeping, maintenance tracking, and accountability for the vessels safe operations.

It is the responsibility of both vessel crew and Marine Operations to support the Master in his / her efforts to actively maintain the CMMS System by continually logging into the system, conducting assigned tasks, and inputting data, etc.

General

Marine Operations has a subscription and will maintain records of its maintenance, inspections, inventory, and forms / checklists, through a Computerized Maintenance Management Software (CMMS) system.

This software system is a cloud-based solution for:

1. Scheduling and documenting maintenance through:
    a. Creation of one-time tasks assigned to various crew or system components.
    b. Schedule periodic maintenance tasks to reoccur on a time-based interval.
    c. Schedule maintenance tasks to be triggered by cumulative readings such as run hours, or fuel consumption.
2. Scheduling and documenting equipment and safety inspections
3. Scheduling and documenting drills and training
4. Creating and maintaining inventories
5. Scheduling or making available various forms and checklists to be completed prior to certain events, such as getting underway or taking on fuel, or as a means of reporting incidents or near misses.
6. Keeping record of vessel documentation and the expiration of such documents
7. Keeping record of crew credentials, training, and qualifications (including internal qualifications).

Throughout this Safety Management System Manual there are references to what shall be logged into the CMMS and what various inspections, maintenance, and forms shall be completed and at what interval. Further the CMMS inspections, maintenance, and forms also reference the SMS Manual and have attachments of the relevant procedure for easy cross-reference.

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Section 7: Vessel Operations

7.1 Master's Standing Orders

Purpose

The purpose of this procedure is to establish that each Master assigned to a VIMS vessel shall set forth standing orders and establish the standards to which these standing orders are upheld.

Responsibility

It is the responsibility of the Master to establish standing orders and to ensure that all deck watch officers are aware of those orders. It is the responsibility of the deck watch officers to ensure that these orders are enforced on watch.

General

Every Master may establish his or her own Standing Orders as a means of communicating base guidelines to which he /she intends for the vessel to be operated. Each Master's guidelines for how much variation of responsibility is ultimately up to that Master, and so is set forth through a document referred to as Standing Orders. These Standing Orders will be reviewed by the DPA.

The regular Master shall promulgate standing orders. These orders shall be reviewed, acknowledged, and signed by all deck watch officers no less than annually, and at any time the standing orders are revised by the Master.

When a relief Master is assigned, he or she may amend or supplement the existing standing orders with approval of the DPA. All deck watch officers shall review, acknowledge, and sign these orders prior to assuming their first watch under the relief Master.

Any Master may, at his / her discretion, publish Night Orders for navigation and other operations when not in attendance in the wheelhouse. If published, all deck watch officers shall review, acknowledge, and initial the Night Orders prior to assuming the watch, and shall ensure that the watch carries out these orders.

Reporting

The Master shall provide a current copy of the Standing Orders to VIMS Marine Operations at least annually, and at any time the orders are revised. A relief Master shall provide a copy of any amended Standing Orders to the VIMS Marine Operations office at the completion of their relief.

Night Orders will be retained on board for the duration of each cruise.

New licensed bridge officers will review and sign the current Master's Standing Orders as part of their initial orientation; this will be documented on the **Computerized Maintenance Management Software (CMMS)** as a part of the **Standing a Navigational Watch Qualifications**.

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7.2 Port Engineer's Responsibilities.

Purpose

The purpose of this procedure is to define the responsibilities for the Port Engineer

Engineer's Responsibility

1. **Maintenance** - The Port Engineer's primary responsibility is to keep the VIMS vessel fleet's maintained as per the vessel's routine **Maintenance Program** defined in Section 10 of this manual.

2. **Auxiliary System –** Is responsible for ensuring vessel crews understand how to maintain auxiliary system used in support of scientific operations such as Cranes, CTD Winch, J-Frame, A-Frame, Trawl Winches and Net Reel in a manner that supports the longevity of the equipment.

3. **Pollution Prevention –**The Port Engineer will ensure all Master's and vessels crews under how to conduct pollution prevention vessels inspection that may lead to an unwanted discharge of pollutants into the water.

4. **Fueling – Ensures the** PIC (Person In Charge) complies with VIMS Fuel & Lube Oil Systems procedures found in the manual when taking on or discharging fuel, oils,

5. **Fuel Level Monitoring –** Although it is the Master's responsibility to ensure that he / she has enough fuel to complete the vessels voyage or operations, the Engineer may determine that the fuel levels, due to ballasting, may not be efficient, and recommend the Master to take on more fuel.

6. **Training and Certification –** It is the Port Engineer's responsibility to, in coordination with the Master, qualify all Chief Engineers or persons conducting Engine Room Rounds and maintain Auxiliary Systems. The Port Engineer will ensure they perform tasks as required in keeping with his / her credentials and qualifications.

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7.3 Port Engineer's Standing Orders

Purpose

The purpose of this procedure is to establish the Engineer's Standing Orders.

Responsibility

It is the responsibility of the Master/Chief Engineer aboard each vessel to establish Standing Orders and to ensure that all persons conducting engine room rounds or working in or around the engine room and / or engineering equipment, are properly trained on the Standing Orders. It is the responsibility of the Master/Chief Engineer to establish a level of competency for persons conducting engine room rounds through the, **Conducting Engine Room Checks Qualification** checklist. If the Master/Chief Engineer does not feel comfortable with an individual conducting the duties of the engineering rounds, it is the Master/Chief Engineer's responsibility to notify the Port Engineer and/or the Master and may decide not to allow that individual to conduct the rounds.

It is the responsibility of the Master, and the Watch Officer to ensure, to the best of their ability, that these orders are enforced during their watch.

General

The Master/Chief Engineer will submit his / her Standing Orders to the Port Engineer or Master for review and approval (by signature) prior to publishing to the engineering department and to the DPA.

If a relief Master/Chief Engineer is assigned on a voyage, he / she may amend the existing Standing Orders, or otherwise will note in writing that the existing Standing Orders will remain in effect. In either case, the Master/Port Engineer will review and sign prior to publication.

Reporting

The Master/Chief Engineer shall maintain a set of Standing Orders. The Master/Chief Engineer will submit his / her Standing Orders to the Port Engineer or Master for review and approval (by signature) prior to publishing to the engineering department and to the DPA. A copy of these signed orders will be posted in the Engine Log and Engine Room. Any time Standing Orders are changed an update of the orders will be provided to the vessel operators and the revision logged in this document.

All persons who are required by their duties to conduct engine room rounds will sign a copy of the Standing Orders after being properly trained on them by the Port Engineer/Chief Engineer.

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7.4 Crew Responsibilities

Purpose

The purpose of this procedure is to set forth the responsibilities of the vessel's personnel.

References

1. 46 CFR 15.1111
2. VIMS Position Descriptions

Responsibilities

Ultimately it is the responsibility of the crew to support the Master, and as such to support the scientific mission of the cruise. It is incumbent on the crew to coordinate their efforts to work in concert, as well as to be versatile in their abilities and duties.

General

The crews onboard Institute vessels consist of USCG licensed personnel (regardless of the vessel's status as an Uninspected Oceanographic Research Vessel). Each licensed officer is a watch-stander and has specific routine responsibilities, as well as responsibilities defined on the Station Bill aboard the vessel.

The workday for an individual is dictated by the activities that the vessel is engaged in and the STCW standards that are set forth in 46 CFR 15.1111. In particular, the following apply:

1. Each person assigned to a navigational watch shall receive a minimum of 10 hours of rest in a 24-hour period.
2. The hours of rest required may be divided into no more than two periods, of which one must be at least 6 hours in length.
3. The requirements above need not be maintained in the case of an emergency or drill or in other overriding operational conditions.
4. The minimum period of 10 hours of rest may be reduced to not less than 6 consecutive hours as long as:
    a. No reduction extends beyond 2 days; and
    b. Not less than 77 hours of rest are provided each 7-day period.
5. The minimum period of rest required under paragraph (A) may not be devoted to watchkeeping or other duties.

In addition to the responsibilities set forth in the job descriptions for each position, the crew may be required to perform galley duties. These duties may include provisioning, food preparation, and cleaning. Crew members will be required to hold appropriate food handling qualifications.

Other responsibilities of the individual crew positions are as follows:

Mate's Responsibilities

It is the Mate's primary responsibility to support the Master in any way that he / she can. While underway it is the Mate's responsibility to follow the Master's Standing Orders while the Master is not present on the bridge or is off watch. The mate must be capable of safely navigating the vessel, safely conducting all operations, and maintaining a good and proper log. The Mate will also be responsible for:

1. **Safety Orientations –** At the discretion of the Master, the Mate may be required to conduct **Crewmember Orientation**, and **Non-Crewmember Orientation** as per the instruction in this document.

2. **Safety Inspections -** To complete and document on the **Computerized Maintenance Management Software (CMMS)**, all safety inspections and fire equipment inspections as per the instruction of this document.

3. **Housekeeping -** The Mate is responsible for the cleanliness of the vessel. It is his / her responsibility to both instigate cleaning parties and to actively participate in those cleaning parties, as well as to continually keep the vessel in a clean and orderly state.

4. **Maintenance** - The Mate should take direction on which maintenance projects the Master has prioritized and should play an active part in implementing the maintenance schedule.

5. **Fueling** –it is the Mate's responsibility to see that the pre-fueling checklist is completed and logged. It is the Mate's responsibility to raise the bravo flag or turn on the fueling light, then to be present to support the Engineer by standing hose watch during the fueling process in case of a spill.

6. **Supply and Inventory** – It is the Mate's responsibility to keep a proper inventory of the deck gear, such as fendering, lines, shackles, tools, and other related equipment needed to work the deck, as well as an inventory of cleaning supplies, maintenance supplies, paint supplies, first aid and safety supplies and to order the supplies as needed and track their shipping progress.

7. **Deck Support** – As needed, it may be the responsibility of the Mate to work the deck during **Overboarding Operations, 7.7 Anchoring Procedures**, while docking the vessel, or any other evolution that requires a person on deck to meet both operational requirements, and / or safety requirements.

8. **As Needed** – The Mate will perform any tasks as required of him / her requested by the Master that are in keeping with his / her credentials and qualifications.

Engineering Responsibilities: Due to the crew size of some of our vessels, the Ship's Crew must support the Engineer by ensuring that the Engineer's Standing Orders are followed. Engineering responsibilities may include:

1. **Engine Room Rounds** – conduct hourly engine room rounds as per the SMF 6.5.2: Qualifications – Conducting Engine Room Rounds. The Ship's Crew will log all rounds, note any non-conformities to the Engineer's Standing Orders, and notify the Engineer in case of a non-conformity.

2. **Maintenance and Inventory** - The Ship's Crew may be required to perform maintenance on any critical and non-critical systems, as delegated by the Master/Chief Engineer. The Ship's Crew may also be required to conduct inventory of spare parts, to include critical spares, and to replenish the stock if required.

3. **Housekeeping** – The Ship's Crew may delegate the responsibilities for maintaining cleanliness and order in the Engine Room. Regardless of it shall be a part of the responsibility of the Ship's Crew that while working in the Engine Room he / she shall consistently maintain a clean and orderly engine room in keeping with the standards established by the Master/Chief Engineer.

Deckhand Responsibilities

The Deckhand supports the Master, Engineer, and Scientists on board through ensuring that the technical equipment on board is operational and appropriately interfaced to meet the demands of the operations. The Marine Technician's responsibilities may include:

1. **Deck Support –** The Deckhand will often be required to work on the deck during scientific operations. This may include working trawl winches and reels, operating the crane, and other vessel-associated equipment. The Deckhand is the direct point of contact for providing deck gear and expertise, as well as line handling, while supporting the needs of both the vessel operator, and scientists. The Deckhand will often be required to assist the Master or Mate as a line handler or deckhand while entering or leaving port.

2. **Engineer Support –** The Deckhand will often work with the Engineer to help support him / her in the maintenance of the shipboard gear and equipment.

3. **Scientific Support –** Often the scientists or contractors may bring their own electronic equipment on board. Often this equipment may need to interface with the ship's navigational systems or sensors, transponders, transducers, etc. It is Deckhand's responsibility to assist the scientists in any way that will help support their research while maintaining security to the vessel's computer and navigation networks.

4. **As Needed** – The Deckhand will perform any tasks as required of him / her requested by the Master that are in keeping with his / her credentials and qualifications.

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7.5 Voyage Planning / Communication

Procedures

The purpose of this procedure is to establish routine passage planning, pre-sail checks, and daily communications (Morning Reports) on board VIMS vessels.

Responsibility

The Master is responsible for evaluating the readiness status of the vessel. This will be accomplished with the assistance of the Mate, Chief Engineer, or Port Engineer (as applicable), Chief Scientist and other personnel as directed.

The Master is responsible and accountable for ensuring safe passage through waterway structures such as bridges, restricted, or constrained waterways. The Master is responsible for utilizing all available information sources, both internal and external, to develop a comprehensive Passage Plan concerning operating requirements or safe passages in the areas the vessel will navigate. The Master should ensure that communication among crew, and / or discussion to clearly plan and articulate the safety concerns of the intended routes.

Operators are responsible for continual and accurate knowledge of the LOA, beam, navigational draft, air draft, and other critical dimensions/characteristics of the vessel. Drafts shall be logged in the deck log daily prior to getting underway. Considerations of the effects of the tidal height and current velocity should be made in planning for a passage, particularly regarding shoal water and bridge heights.

Operators are responsible for preventing distractions, especially use of cell phones during passages.

General

The operational demands of VIMS vessels can take them into diverse waters, from rivers to bays and oceans, from shoal water to deep channels, and from un-trafficked waters to heavily trafficked shipping lanes, often within a single voyage. As such, it is of the utmost importance that prior to getting underway Pre-sail Navigational and Engineering Checks are completed to ensure that all systems are online and operational.

Procedures

Once the departure time has been agreed upon between the Master and Chief Scientist then the crew is notified to give them the appropriate time to prepare. Any change in the day or time of departure, which will have a schedule impact, must be approved by the Director of Marine Operations.

It is always understood that the departure time may be flexible in order to accommodate a variety of unforeseen issues which may cause delays, or conversely in some cases, an early departure. In each case, every attempt will be made to adhere to the established time.

Prior to getting underway:

1. The Master will attend to the procedures required to make ready in all respects for getting underway. This includes but is not limited to:
    a. Taking the time in advance to bring systems online for testing and warm up.
    b. Switching to ship's power.
    c. Testing or observing the testing of all vital systems.
    d. Verifying that the vessel is in correct trim.

   When all procedures have been completed, the Chief Engineer/Mate will report to the Master that the vessel is ready in all respects to get underway or if not will report deficiencies in need of attention.

2. The Mate will inspect the decks and attendant interior spaces to ensure that all gear and equipment has been properly secured. Properly secured means that the vessel is ready to proceed into any and all potential weather conditions. The Mate will report any deficiencies in need of attention to the Master prior to getting underway.

3. The Chief Scientist will ensure that his labs and equipment are properly secured for the sea. Additionally, he will report that all members of the science party are on board and that they are ready to proceed.

4. The Master / Mate will work from **SMF 7.5.1: Pre-Sail Checklist**, to ensure that all bridge and navigation systems are online and in good order and that the requisite systems have been tested (steering/propulsion/bow thruster, etc.) After completing the Pre-Sail Checklist, including testing the ship's bow thruster, propulsion controls, and steering on the bridge, then the Master may determine that the vessel is ready to get underway.

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7.5.1 Pre-sail Checklists

General

In reference to 33 CFR 164.25 and 46 CFR Subpart E, Pre-Sail Navigational, Documentation, Safety, and Equipment Checks shall be conducted and documented prior to getting underway from the dock. A new Pre-Sail Checklist shall be required only after the Main Engine and Steering Systems have been secured and brought back online prior to getting underway.

Procedure

The Pre-Sail Checklist is located on the **Computerized Maintenance Management Software (CMMS)**. The Pre-Sail Checklist shall be filled out by a qualified watchstander as designated by the Master. Any discrepancies noted in the comments, and then submitted to the Master for approval. The checklist will then be maintained on the CMMS software.

A copy of the Pre-Sail Checklist can also be found in the Forms section of this document under **SMF 7.5.1: Pre-Sail Checklist**

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7.5.2 Cruise Planning

General

To the best of the Master's ability every attempt at the development of a Passage Plan, as well as the close and continuous monitoring of the vessel's progress and position during the execution of such a plan are of essential importance for safety of life at sea, safety and efficiency of navigation, and protection of the marine environment. These guidelines address the guidelines for passage making through bridges, locks, canals, floating structures, narrow channels, areas where the vessel is constrained by draft, areas actively being dredged, and other restricted or constrained waterways. Passages through bridges and structures should be undertaken with extra measures of caution. Pre-planning, preparation, and other considerations, such as environmental factors, should be considered to reduce the risk of collision, allision, or other mishap.

Further, plans during a voyage can change as the demands of the scientific operations change, and so the vessel may be required to deviate from a course or track into unfamiliar waters. As such the Master and crew should be prepared to make such revisions to their route and Passage Plan while underway, and if the Master deems necessary, communicate such deviations with the Designated Person Ashore.

Procedures

When creating a Passage Plan, the following should be considered for the safety of navigation:

1. **Passage Making / Safety of Navigation:**
    a. Operators making the passages should assess prevailing circumstances. Factors include, but are not limited to:
        i. Winds, present weather, and predicted weather
        ii. Currents/flood stage
        iii. Height of the tide or water height relative to flood stage or charted datum
        iv. Reduced or restricted visibility due to fog, rain, snow, or other conditions
        v. Construction, dredging, or similar activities that restrict the vessel's movement.
        vi. Vessel Traffic in the area
        vii. Any Special Notices to Mariners
        viii. And any other unforeseen hazards to navigation

b. Operators should consider public safety, personnel safety, safety of bridges and/or structures, as well as the environment. Concerns for safe passage making take precedence over adherence to schedules or any routine or scientific operations. The Master has the responsibility to delay getting underway, or slow down speed for the safety of navigation.
c. While underway on passage operators should review navigation information, Notices to Mariners, chart data, and similar sources of safety advisories for the operational status of bridges / locks along the intended voyage track. This information and the estimated time of the vessel's passage through any bridge or shore side structure should be briefed and discussed among operators during the voyage planning process, or upon watch change.
d. Any changes to the Voyage Plan should be discussed at watch change, as well as any Coast Guard Notice to Mariners radio broadcast, bridge broadcast, or any other radio traffic from vessels in the vicinity of the bridge that provides timely warning or caution information.

2. **Navigating Bridge & Structures:**
   a. The Master is expected to take all practical actions to arrange bridge transits during conditions of favorable weather, including visibility, wind strength, current flow, and height of tide. If any of these factors seem to be less than fully safe, appropriate actions should be taken to reduce or eliminate risk.
   b. During any approach and passage through a bridge span or similarly restricted area, the vessel's radar(s) should be operating and adjusted to the most accurate range.
   c. During the approach to any bridges, structure, overhead wires, etc., if a watch stander/lookout judges that the available opening for transit appears uncertain or to be less than sufficient to allow a safe passage, the vessel should be slowed or stopped and the dimensions of both the bridge clearance and vessel should be verified for safety prior to initiating transit.
   d. In circumstances where the area of passage maybe congested due to high levels of vessel traffic or by construction equipment projecting into the waterway the Master is expected to use prudence and good, conservative judgment to determine the safety of transit.
   e. During zero or near zero visibility conditions, all navigation equipment, specifically RADAR's, must be fully operational and the vessel's position verified prior to attempting to navigate a bridge or structure. Alternatively, anchor or moor delay passage through constrained and restricted structures during insufficient visibility.
   f. Operators should establish timely, positive, and reliable communications with the bridge tender of lift and swing bridges to determine the bridge lift or swing time and any other factors affecting the passage. If an opening of the bridge is required, the Operator should request the appropriate lift / opening as best determined by the Officer of the Watch in a timely manner that will facilitate safe passage. The bridge should be completely raised

("full lift") or have made a complete swing before negotiating the narrow transit.

g. Under no circumstances will autopilot be in use during the approach and passage of a bridge, lock, or other constrained navigation structure.

3. **Channel / Shoal Water Navigation:**
   a. Voyage Planning should include pre-sail ETDs that are intended to avoid close quarters maneuvering in restricted channels, particularly for channel restrictions due to vessel traffic situations.
   b. If the passage is in an area controlled by a Vessel Traffic System (VTS), the Operator should communicate as early as possible with the VTS watch to arrange passages.
   c. Operators should make passing arrangements in accordance with the Navigational Rules of the Road (COLREGS) in a prompt and timely matter, monitoring AIS and the VHF radio for information on approaching traffic.
   d. The vessel operator should at all times make every possible effort to keep at least 10 feet of water under the keel. This means that when transiting across shoal water the charted depth should be at 20 feet, considering that the charted depth is at mean lower low water, and that in conditions of tidal extremes then the vessel should take that into account. These water depth restrictions can be eased in situations where there is an intimate understanding of the bathymetry and/or a special circumstance that Master determines to be safe for a particular evolution.

4. **Cruise Plan:**
   a. While planning a voyage all relevant information should be considered. The following items should be considered in the Master's planning:
      i. The condition of the vessel.
      ii. Any special characteristics of the operations (trawling, long lining, towing scientific gear, etc.).
      iii. Effect of Current or Tidal Depths.
      iv. Forecast Weather.
      v. Vessel Traffic Service (VTS), if applicable.
      vi. Traffic likely to be encountered throughout the voyage.
      vii. Navigating bridges, shoals, and structures, ensuring adequate vertical and horizontal clearance based on vessel's air draft, draft, and beam.
      viii. Port or berth information.
      ix. Consulted Local Notice to Mariners
   b. Should the Mate be tasked with creating a passage plan it shall be contingent on the approval of the Master.
   c. When at all possible while transiting, a route should be planned, plotting a track line on the electronic chart, and that track line should be reviewed by the Master for any hazards to navigation prior to transiting. Notes should

be kept regarding any hazards or considerations and should be passed on to the next watch stander at watch change.

d. In compliance with NVIC Electronic Charts and Publications the Electronic Navigational Computers (ENC) are the primary navigational charting system for the vessel. As such the system should be updated daily and the updates shall be logged in the Deck Log.

5. **Reporting:** Prior to getting underway on a voyage (departing from port, transit to operational area and/or transit to another or same port), a cruise plan should be submitted to the DPA. This passage plan should include, unless recorded elsewhere:
   a. Persons on board
   b. Estimated time of departure
   c. Departure location
   d. Estimated time of arrival
   e. Arrival location
   f. Vessel Operations
   g. Cruise Plan (transit routes)

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7.5.3 Morning Report

Daily communications with the DPA, or his/her designee, will at a minimum include the following information:

1. Date
2. Vessel Activity
3. Current Location
4. Current Weather / Forecast for Operational area
5. Names of Personnel on Board if personnel change
6. Operational Condition Comments

These communications will be via email, satellite communication, or a phone call if email access is limited or not available.

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7.6 Stability / Ballast

Purpose

The purpose of this section is to establish responsibility and guidance for managing ship stability and ballast water.

Scope

While maintaining positive stability is essential to the safe operations of all vessels in Marine Operations, the *R/V Virginia* is built with water ballasting tanks, a port and starboard fuel tank, as well as a day fuel tank. Additionally, the vessel holds a load line certificate, a stability booklet, and stability calculations software. **This section applies only to R*/V Virginia*.**

References

1. 46 CFR 42.15-1(b),
2. 46 CFR 170.110,
3. 46 CFR 170.120(a),
4. 33 CFR 151.2015 (d)
5. International Load Line Certificate #1533917 issued 22 FEB 2019.
6. *R/V Virginia* "Stability Booklet" Doc. No. C16-67-020-01 Rev. 3 bearing the ABS stamp dated 13 February 2019.

Responsibilities

1. The Master will work with the DPA to ensure that all current baseline stability data are current, accurate and available. Changes to the vessel are controlled and managed to ensure compliance with applicable regulations. This includes scheduling and conducting stability tests as necessary.
2. The DPA will ensure that the vessel is provided with a current trim and stability booklet and / or a computerized system be made available to the Master.
3. The Master will ensure that various loads are managed so that the stability requirements are met. Any concerns regarding the stability of the vessel will be conveyed to the DPA prior to departure.

Procedures

1. **Stability**
    a. Stability calculations must be made and recorded at the beginning of each cruise and at any other time the Master deems appropriate (i.e., when significant changes in load take place).
    b. The vessel's Trim and Stability Booklet provides instructions and information for calculating that vessel's stability. The Master must ensure that he or she and designated Mates are instructed and competent to perform such calculations.
    c. Stability calculations, whether determined manually or by computer, will be double-checked by confirming the drafts of the vessel at the bow and stern prior to departure.

d. Marinating the vessel's trim will primarily use the transfer of fuel.

2. **Ballast Water**
   a. In accordance with 33 CFR 151.2015 (d) vessels that are non-seagoing, less than 1600 GRT (3000 ITC), or that take on and discharge ballast water exclusively in a single COTP Zone are exempt from the requirements for Ballast Water Management in 33 CFR Subpart D.
   b. If additional ballasting is required to maintain vessel trim, then potable water will be used whenever possible.
   c. When potable water is not available then ballast water will be taken from and discharged in the same COTP Zone.
   d. Should the vessel be operating outside of the EEZ and require onboarding ballast water, then the taking and discharge of that ballast water will take place outside of the EEZ and be logged in the Deck Log.
   e. Any discharge of ballast will follow all current USCG and EPA regulations and will be documented in the Deck Log.

Reporting

1. The Master is responsible for addressing all stability concerns prior to departure.
2. The drafts and load line mark of the vessel will be recorded during the Pre-Sail Checks and recorded in the Deck Log.
3. When within 25% of the vessel's maximum loading capacity then calculations verifying the vessel stability will be required to be maintained on board and will be recorded in the Deck Log.
4. The taking on and discharging of ballast water will be recorded in the Ballast Water Log, and updated by the Master.

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7.7 Anchoring Procedures

Purpose

The purpose of this procedure is to set forth guidelines for anchoring of vessels.

Responsibility

The Master has overall responsibility for the ship and crew during anchoring procedures. The windlass structure and related hardware, as well as periodic lubrication (lube points identified and marked on unit), are maintained by crew as designated by the Master. The mechanical, hydraulic, and electrical components are maintained by the Chief/Port Engineer, or his/her designer. The decision to anchor the vessel ultimately rests with the Master.

It shall also be the Master's responsibility to conduct annual training on anchor handling procedures, including emergency anchor handling.

General

Anchoring operations may occur as a planned evolution, or as an unplanned evolution in the case of an emergency such as a loss of power or steering. In either circumstance it is the Master's responsibility to communicate with the crew that the anchor will be let go and set, as well as to coordinate the anchor handling operations.

The standard procedure during periodic shipyard maintenance is to range out the anchor and chain, end for end the chain, and re-mark the shots prior to reinstallation. If excessive signs of corrosion are detected, then thickness gauging may be determined to be necessary.

A risk assessment and JSA shall be conducted as per this manual's instruction, prior to letting go of the anchor.

Procedures

Each vessel shall have onboard operating instructions for letting go and retrieving that vessel's anchor. Regardless of the vessel the following procedures shall be followed.

1. **Letting go the Anchor**
    a. Determine the best location for anchoring, trying to stay within designated anchorages, well away from navigational channels, sheltered, and with good holding ground.
    b. Establish communications with the deck crew.
    c. Approach the anchorage at a safe speed, direct the deck crew to prepare to let go the anchor, but to hold it until the order is given.
    d. When over the area that will be the anchorage, confirm the depth, calculating the scope as best as possible taking into consideration forecasted wind speed, projected current velocity, and tidal range.
        i. Under normal conditions 6:1 scope (6 feet of chain for foot of depth)

ii. If strong winds, strong currents, or poor holding conditions are expected then a scope of 10:1 should be set out.

e. Communicate the desired scope to the deck crew.
f. Once the vessel begins to gain stern way give the order to let go the anchor
g. Once the anchor is on the bottom set a mark on the electronic chart
h. Once all the scope has been let out increase the sternway slightly to set the anchor
i. Establish a radar ring of ½ nm, and a proximity range on the ECS of ½ nm, or less if in tighter restrictions due to the nature of the anchorage.
j. Set the anchor dragging alarm on the ECS or RADAR.
k. Set the single round ball day shape or burn the all-around white light.
l. At a minimum one crew member will be on anchor watch for the duration of the time that the vessel is at anchor. An anchor watch shall:
    i. Monitor the swing of the vessel ensuring that the mark where the anchor is remains relative to the ranges established on the chart plotter.
    ii. Monitor for traffic, hailing vessels that may have a CPA that creates a potential hazard to the vessel, or the gear laid out.
    iii. Will conduct regular vessel rounds for security and safety.

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7.8 Lookout / Low Visibility

Purpose

The purpose of these procedures is to establish a guideline for what shall be deemed a lookout and when such a lookout is necessary.

Responsibilities

It is the responsibility of the Master to attempt to avoid any forecasted low visibility areas. It is the responsibility of the Officer of the Watch to provide a good lookout should low visibility be encountered.

General

These guidelines address the duties required of a "Lookout" as defined by 33 CFR 83.05 – Look-out (Rule 5). While operating any vessel, there may be periods when fog, rain, snow, dust, or other weather can cause reduced visibility. Careful consideration and judgment should be given in making safe decisions while operating under reduced visibility conditions that are in the best keeping with 33 CFR 83.19 – Conduct of vessels in restricted visibility (Rule 19).

No schedule is more important than the safety of personnel, the vessel, or the environment. Remaining at a safe mooring and NOT getting underway into reduced visibility is always the best practice to eliminate the risk of accident. When mooring safely isn't practical, and it is necessary for the vessel to remain underway in the onset of reduced visibility, extra measures of precaution are necessary. Additional lookouts may be needed and should be put on watch if in the judgment of the Master the visibility is reduced creating an increase of risk.

Procedures

1. The officer on watch should determine if restricted or reduced visibility conditions exist by the fastest practical means. Visual lookout, radar observations, communications with other vessels / stations, and any other means applicable can aid in either the avoidance / or preparedness of / for a low visibility scenario. Upon determination of reduced or restricted visibility the Master, if not on watch, should be informed. Precautions should be considered and taken to determine the presence of other vessels actively and continuously, risk of collision, navigation aids and dangers.

2. In accordance with 33 CFR 83.07 (Rule 7), regardless of visibility, but especially in the case of low visibility, the radar shall be used to provide long-range scanning to help obtain early warning of risk of collision. Should the radar become inoperable, and the Mate is on watch, then the Master should be notified. Speed should be reduced for safety of navigation to avoid collision / allisions. If the risk of collision exists in an area of heavy vessel traffic, then the vessel should have to maintain the engines at the ready for maneuverability or set the anchor in an appropriate anchorage until visibility improves.

3. When it has been determined that the vessel is operating in low visibility the vessel operator shall reduce the speed of the vessel to a speed in which can be stopped or maneuvered in a safe distance as determined by the prevailing conditions, traffic density, sea state, current, depth of

water / restricted maneuverability due to a close navigational situations, etc. as set forth by 33 CFR 83.06 Safe Speed (Rule 6).

4. In a low visibility situation, all sound signals shall be made in accordance with 33 CFR 83.35 – Sound signals in restricted visibility (Rule 35), as determined by the vessel's navigational status.

5. In a reduced visibility scenario, the vessel's running lights should be turned on to reflect the vessel's navigational status as per 33 CFR 83 as determined by the vessel's navigational status.

6. Due to the nature of her construction, being that the wheelhouse is positioned so far forward, it may not be applicable to post a lookout. However, the second watch stander should be present in a low visibility situation so that they can provide a second set of eyes and ears, as well as be present in case needed. No other duties shall be issued to the secondary watch stander providing lookout.

7. The officer on watch may determine that it is prudent to make security calls on VHF Channel 13 and 16 in the case of low visibility. Should this be the case then security calls should be given routinely indicating the vessel's position, the visibility in that area, and navigational status.

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7.9 Heavy Weather Precautions

Purpose

The purpose of this procedure is to establish guidelines for preventing an encounter with heavy weather, and in the case of heavy weather what precautions to take.

Responsibility

It is the ultimate responsibility of the Master to make every attempt, by all means available, to avoid steaming into heavy weather that may present in his / her best judgement a hazardous situation to the safety of the vessel and crew.

Further, acknowledging that at times encountering heavy weather is unavoidable, it is the Master's responsibility to ensure that the vessel maintains a state of seaworthiness to meet the demands of storm force conditions. This includes the stowage of gear on decks and below decks to prevent items from becoming dislodged and causing harm. The Master may delegate these responsibilities to members of the crew, though ultimately the responsibility still rests with him / her.

General

These procedures address heavy weather and dangerous environmental conditions that pose risks and hazards to the vessel and personnel. Hazardous weather has been responsible for more maritime injuries, fatalities, and losses than any other historical causes.

Proper **Passage Planning** as per Section 7.5.2 in this manual, shall attempt to determine the risks from inclement weather. Continued monitoring of weather systems through all means available is essential in preventing a hazardous situation for vessel and crew. At no time should the vessel get underway or commence scientific operations if the Master determines that prevailing or deteriorating weather conditions present a risk to vessel, equipment, or the well-being of personnel onboard.

Procedures

1. During passage planning, or preparing for operations, it is the Master's responsibility to avoid and evade heavy weather, severe storms, and any other adverse environmental conditions that could endanger the vessel or vessel's personnel.

2. The watch shall frequently monitor weather forecasts for the area of operations and planned areas of operation using all means available including local observation, VHF, and cellular apps and internet sites.

    a. Should the vessel lose the ability to acquire a current weather forecast, then the Master should make a note in the **Morning Report**, that the vessel is unable to obtain a forecast. In which case the DPA should make every effort to issue an updated forecast to the vessel.

3. Keep the crew informed of anticipated weather conditions.

4. In the event that heavy weather is forecasted:

    a. Secure the exterior and interior boat from loose objects and ensure maximum watertight integrity is set and checked well before the onset of heavy weather.

    b. Ensure vessel systems, especially navigational, steering control, propulsion, and electrical systems are checked and ready for maximum reliability. This may include topping of the day tank to prevent the need to conduct a fuel transfer in heavy weather.

    c. Ensure the vessel's liquid load / ballast tanks are in compliance with stability information and requirements of the vessel. Ballast early, if necessary.

    d. Ensure crew endurance (rest and food) are maximized before the onset of storm conditions to reduce early fatigue. Treat crew with known seasickness tendencies.

    e. Review potential divert ports and, if necessary, divert to nearest port.

    f. Weather decks shall be restricted to all personnel unless access is deemed necessary by the Master.

    g. As appropriate, communications shall be maintained with the DPA.

5. Should the vessel be offshore when the onset of a heavy weather situation presents itself then it is advisable that the Master, at his / her discretion, establish communications with the US Coast Guard. This can be done in coordination with the DPA.

6. In the event of ice, maneuver with extreme caution and cease headway if the danger of potential hull damage is possible. Advise the DPA and / or the US Coast Guard (if needed).

    a. Should the vessel become set in ice use extreme caution while maneuvering, taking special care to protect the rudder and prop from damage from ice flows. The vessel should avoid backing using the prop.

7. Lightning and Electrical Storms / Thunderstorms present particular hazards while operating, and can be local in nature, develop quickly without warning, contain gusts of hurricane force or greater, dangerous lightening, hail, or tornadoes / waterspouts.

    a. The Master should monitor Marine Safety Bulletins on the VHF channel 16 and 22a for updated severe weather warnings and watches.
    b. When the Master determines that a lightning / electrical storm has the potential to impact the safety of the vessel and personnel, then he / she will secure all scientific operations and secure the weather decks until determined that the conditions have passed, and the conditions are safe for working.

c. The Master should communicate the hazardous lighting / electrical conditions and status of operations with the DPA as appropriate.

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7.10 Watch Turnover

Purpose

The purpose of this procedure is to establish guidelines for turning over a watch.

Responsibilities

It shall be the responsibility of the Master to ensure that all watch standers on board the vessel carry the required credentials and training, and that those credentials and training are current prior to allowing any person to take a watch. It is the Master's responsibility to verify that all people standing watches on board the vessel have completed the internal Qualifications, as per the instructions in this manual, as applicable to their responsibilities. Further, the Master will ensure that his / her **Master's Standing Orders** are current and available in the wheelhouse.

It shall be the Master's responsibility to ensure that all watch standers have had appropriate rest as per the instruction in this manual under the **Crew Responsibilities** section of this document and are physically and mentally capable of standing their watch.

It shall be the responsibility of the Master to ensure that all persons conducting engine room rounds have been properly qualified by the Engineer (as applicable) as per the standards established in the Qualifications section of this manual.

All relevant crew are responsible for following the **Master's Standing Orders** and **Chief Engineer's Standing** Orders to the best of their ability. Should any deviation from those orders be required, the crew members must notify the Master or Chief. While the Master is responsible for providing off time for rest, each crew member must ensure they are using that time for rest.

It is the responsibility of each watch stander to allow themselves enough time to become acquainted with the vessel's operations, the prevailing weather and conditions, other traffic in the operating area, and any other information as pertains to their watch prior to their watch turn over time.

General

Navigational Watch – A Navigational Watch turnover will include the following information:

1. Location,
2. Course and Speed,
3. Weather and Current Observations,
4. Vessel / Scientific Operations
5. Engineering Status
6. Traffic and Standing Passing Arrangements.
7. Radar Targets
8. Marine Safety Bulletins / Nearby Vessel Security Calls
9. Potential hazards to navigation

Reporting

Watch turnovers shall be recorded in the **Computerized Maintenance Management Software (CMMS)** and the Deck Log.

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7.11 Life Saving and Survival Equipment

Purpose

The purpose of these procedures is to set forth the guidelines for inspecting and maintaining survival equipment aboard VIMS vessels.

Responsibilities

It is the responsibility of the Marine Safety Officer to ensure that all the appropriate survival equipment is provided to the vessel, and to provide access to certified third-party inspectors when required for the survival equipment to be inspected per the manufacturer's instructions.

It is the Master's responsibility to ensure that all lifesaving and survival equipment is in serviceable condition and that personnel are trained in its use. Serviceable condition means that not only is the equipment functional and safe to use, but that the equipment is current on all inspections, both onboard the vessel as a part of this policy and conducted by a third party in accordance with the manufacturer's instructions.

The Master may delegate these responsibilities to another crewmember, but inspecting, maintaining, training vessel personnel, and maintaining records of inspections and maintenance of the vessel's lifesaving and survival equipment is the responsibility of the Master.

General

1. **Life Jackets:**
    a. Life jackets must be stowed where they are readily accessible.
    b. There shall be a life jacket on board for each person.
    c. Life jackets shall be stowed so that they are clearly visible, and unobstructed.
    d. The life jacket should be able to be freely pulled from its storage location and that storage location marked with the proper IMO symbol.
    e. Each life jacket is marked with the vessel name and has one whistle and one light attached to it.
    f. An inventory of life jackets should be conducted every month, and / or prior to getting underway.
    g. An inspection of life jackets shall be conducted monthly.
        i. Each life jacket shall be inspected for tears, serviceability of the straps, clips, and reflective tape.
        ii. That each life jacket has a sound signaling device and a strobe light.
            1. The expiration date for the water activated lights, or the Lithium AA batteries for the manual flashing strobes, shall be monitored and replaced on the expiration date or every 5 years, as per manufacturer's recommendations.

2. **Survival Suits:**
    a. Survival suits **must be stowed where they are readily accessible**

b. There shall be a survival suit on board for each individual.
c. Survival suits shall be stowed so that they are clearly visible and unobstructed.
d. The survival suits should be able to be freely pulled from its storage location and that storage location marked with the appropriate IMO symbol.
e. Each survival suit is marked with the vessel's name and has one whistle and one manually operated flashing strobe attached to it.
f. An inventory of all survival suits should be made monthly and / or prior to getting underway.
g. Inspections of survival suits shall be conducted monthly as per: 46 CFR 199190(e) and SOLAS Reg. III/20.7, and shall include:
    i. Examine the storage bag:
        1. General condition / closures
        2. Ease of removal of suit
        3. Donning instructions are legible
        4. Confirm that suit is type and size identified on the bag
    ii. Place the suit on a clean flat surface:
        1. Make sure the suit is dry inside and out
        2. Visually check for damage
        3. Rips tears or punctures should be repaired in accordance with the manufacturer's instructions by a suitable repair station
    iii. Check the zipper
        1. Slide up and down, check for ease of operation
        2. Lubricate front and back of the zipper and the slide fastener using lubricant recommended by the manufacturer
        3. If the zipper is not functional then the suit must be removed from service and discarded or returned for repair to manufacturer of suitable repair station
    iv. Inflatable head support and / or buoyancy ring if fitted
        1. Check for damage / ensure it is properly attached
        2. Check inflation hoses for deterioration
        3. At least quarterly the head support / buoyancy ring should be inflated and tested for leaks
        4. Leaks should be repaired in accordance with the manufacturer's instructions at a suitable repair station
    v. Check retroreflective tape for condition and adhesion. Replace if necessary.
    vi. That each survival suit has a sound signaling device and a strobe light.
        1. The expiration date for the Lithium AA batteries for the manual flashing strobes shall be monitored and replaced as per manufacturer's recommendation every 5 years.
    vii. Replace the suit into the bag with zippers fully open.
    viii. Training: Take the time during monthly inspections for the crew to practice donning the immersion suits.
h. Each survival suit shall be taken to an authorized inspection facility for an air pressure test every three years, unless the suits are 10 years old, or older, in which case they shall be inspected and certified annually.

i. For further reference to the inspection and maintenance of Survival Suits refer to NVIC 01-08

3. **Life Rafts**
   a. Life raft should be stowed at the muster station with a float-free arrangement, ability to automatically or manually be released and be readily transferable for launching on either side of the ship.
   b. Life rafts shall be inventoried and visually inspected for serviceability monthly, and / or prior to getting underway. The inspection shall include:
      i. Ensuring that the life raft cannister does not have any cracks.
      ii. That the straps in in serviceable condition
      iii. That the pelican hook is secure.
      iv. That the sea painter is intact and serviceable
      v. That the hydrostat release is present and within its date of expiration.
   c. The life rafts are inspected and certified by a third party off-site certified inspector annually.
   d. The hydrostatic releases are replaced every 2 years.

4. **Life Rings**
   a. R/V Virginia and R/V Bay Eagle requires three Life Rings
   b. R/V Tidewater and R/V Tyndall Pointe require one life ring.
   c. Each life ring must be
      i.
      ii. Approved IAW Title 46 Chapter I Subchapter T Part 180 Subpart C. 180.70
      iii. Be readily accessible,
      iv. Bestowed in a way that it can be rapidly cast loose,
      v. Not be permanently secured in any way, and
      vi. If on a vessel on an oceans or coastwise route, be orange in color
   d. Life Rings are marked with the vessel name.
   e. If applicable, equipped with a strobe and 15-minute orange smoke signal.
   f. At least one ring life buoy must be fitted with a lifeline. If more than one ring life buoy is carried, at least one must not have a lifeline attached. Each lifeline on a ring life buoy must:
      i. Be buoyant
      ii. 18.3 meters (60 feet) in length
      iii. Non-kinking line
      iv. Diameter of 7.9 millimeters (5/16 inch)
      v. Breaking strength of at least 5 kilonewtons (1124 pounds
      vi. Dark color if synthetic, or of a type certified to be resistant to deterioration from ultraviolet light.
   g. The other life rings are located with a floating LED light.
   h. Each life ring shall be inspected monthly for excessive wear, operation of light, expiration of the smoke cannister, and condition of throw rope.

5. **EPIRB**
   a. The ship's EPIRB should be located for accessibility and free-floating position.

b. It is equipped with a hydrostatic release.
c. The EPIRB shall be inspected monthly as follows:
    i. Remove the cover and visually inspect the device and hydrostatic release. The hydrostatic release expires every two years.
    ii. To test the EPIRB lift the tab on the right-hand side to the up position and hold it there. A green light will flash 6 times. This indicates that the EPIRB is operational.
d. To activate the EPIRB flip the switch all the way over. A red light should begin to flash indicating that it is activated.
e. Should the hydrostatic release be tripped, then the EPIRB will automatically be activated.
f. The EPIRB must be registered, and the registration renewed every 2 years. The registration is located in the folder with the ship's documents.

6. **Personal Locating Beacons (if equipped)**
    a. PLB's will be inspected as per the manufacturer's recommendations once every month. To perform a basic self-test:
        i. Unclip the antenna latch from the case and rotate the antenna 90 degrees into the upright position. (ON/OFF button will be exposed on face of beacon once antenna is in upright position)
        ii. Depress the Test button between 2 to 5 seconds.
        iii. A quick flash of the green LED is an indicator that Self-Test was initiated. This will always be the first LED flash in the self-test sequence.
        iv. A green LED flash will show the start of the Self-Test and will be followed by 3 green LED flashes (total of 4) and a strobe, indicating a successful Self-Test. The third green LED flash is an indication that 406 MHz and 121.5 MHz RF were transmitted. The PLB-425 will show this light sequence and will also flash a message on the screen saying "Self-Test Pass" at the end of the self-test.
        v. Any red LED flash observed in the above sequence indicates that the beacon has failed the self-test. Repeat the self-test. If the failure persists, contact ACR Electronics, Inc. or an authorized Battery Replacement Center (BRC) for servicing of your beacon. The PLB-425 will flash a message saying "Self-Test Fail" at the end of a failed self-test.
    b. The PLB's are equipped with batteries. The battery expiration dates will be tracked using the vessels **Computerized Maintenance Management Software (CMMS)** and will be replaced as needed.

7. **SART (if equipped)**
    a. The SART will be inspected visually once every 2 weeks.
    b. Annually the SART will be activated and tested against the vessel's radar.
    c. The SART is equipped with a Lithium Ion Battery which has an expiration date. The battery will be kept up to date.

8. **Flares**
    a. Flares should be inventoried monthly.

b. Flares should be inspected to ensure that they are not expired.
c. Flares should be visually inspected for signs of wear, deterioration, or any other indication that might question their serviceability

9. **Line Throwing Apparatus (if equipped)**
    a. The Line Throwing Apparatus' are also equipped with a rocket propellant
    b. The Line Throwing Apparatus' will be inspected monthly for serviceability ensuring that:
        i. The body of the device is free from wear and cracks
        ii. The lid is intact and in place
        iii. The safety seal on the twist handle is intact
        iv. The rocket propellant cartridge has not expired

Reporting

All inventory, inspections, expiration dates, and maintenance will be logged on to the vessel's **Computerized Maintenance Management Software (CMMS)** system. This system is programmed to prompt any tasks, either scheduled or unscheduled, to responsible parties. Further the system keeps a log of all tasks performed on life saving and survival equipment for future reference.

All current required certifications / registrations regarding the vessel's lifesaving and survival equipment shall be maintained on board.

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7.12 Waste Management

Purpose

The purpose of this procedure is to set forth the guidelines necessary for proper waste oil, sewage, and trash management aboard the VIMS vessels.

Responsibilities

With the knowledge and approval of the Master:

1. The Chief Engineer (as applicable) is responsible for management and disposal of waste oil.
2. The Chief Engineer (as applicable) is responsible for management, treatment and disposal of sewage.
3. The Chief Mate (as applicable) is responsible for management, storage and disposal of trash.

General

Under no circumstances will anything be discharged over the side of the vessel without the approval of the Master, or Mate on Watch.

1. **Waste Oil**
   a. Waste oil is transferred into the ship's waste oil tank. The waste oil is then transferred to an approved shoreside facility / container / hauler for further proper disposal. All waste oil transfers are to be recorded in the deck log, including the amount of transfer, and to what facility. All paperwork and receipts documenting the transfer of waste oil must be retained by the ship for submission to the Marine Operations Office.

Discharge of Oil Prohibited

The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste into or upon the navigable waters of the United States, or the waters of the contiguous zone, or which may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the United States, if such discharge causes a film or discoloration of the surface of the water or causes a sludge or emulsion beneath the surface of the water. Violators are subject to substantial civil penalties and/or criminal sanctions including fines and imprisonment.

2. **Bilge Slops**
   a. If applicable, all any bilge waste shall be stored in the bilge slop tank and maintained in that tank until it can be properly transferred to an approved shoreside facility. A record of any transfers into the slop tank and from the tank to shore shall be maintained on board.

3. **Sewage**
   a. All VIMS vessels are equipped with a USCG- and IMO-approved Marine Sanitation Device (MSD) Type II or III. Wherever practicable and / or required by law, the MSD shall be used for treatment of ship's sewage prior to over the side discharge. Local laws and regulations may prohibit any discharge even of MSD-treated sewage.

b. In port, if deemed necessary or prudent, ship's sewage will be pumped ashore to an approved facility. This may be an approved tank, shoreside sewage discharge line or truck. The procedure will be conducted at the direction of the port authorities.
c. At sea, sewage is discharged in compliance with the Federal Clean Water Act. Every effort shall be made to discharge as far out as possible. In keeping with the law, untreated sewage shall never be discharged closer than 3 nautical miles from shore. These limits may be modified or extended to comply with local laws and regulations. Sewage may be retained on board upon the high seas for an extended period, within practical limitations, if requested by the chief scientist so as to not compromise the science work.

Under no circumstances will untreated sewage or graywater be pumped directly over the side while in port.

4. **Trash**
   a. In port, local law or regulations generally dictate discharge of trash. All trash will be retained on board until it can be discharged at a proper facility.
   b. At sea, disposal of trash is done in accordance with the restrictions set forth in the MARPOL 73/78 ANNEX V.
      i. Trash is separated on board, plastics in one container and trash in the other.
      ii. Plastics and most other trash are kept on board and properly disposed of at the port of arrival.
      iii. Permission must be obtained from the watch officer before dumping of trash is allowed in order to ensure compliance with regulations or to prevent harm to the science project.

Under no circumstances are plastics to be disposed of in the ocean or waterways.

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7.13 Fuel & Lube Oil Systems

Purpose

The purpose of this procedure is to set forth the guidelines for safe operation of the fuel and lubricating oil systems (fill, transfer, and service) on VIMS vessels.

References

1. 33 CFR Subchapter O (Pollution)
2. MARPOL Annex VI
3. *R/V Virginia* "Stability Booklet" Doc. No. C16-67-020-01 Rev. 3 bearing the ABS stamp dated 13 February 2019.
4. *R/V Virginia* Non-tank Vessel Response Plan

Responsibilities

The Master is responsible for ensuring that all requirements of law regarding the safe transfer and handling of oils are satisfied.

During fuel transfer operations the Master is ultimately responsible for the Stability and Trim of the vessel as per **Section 7.6: Stability / Ballast**.

The Chief Engineer (as applicable) is responsible for monitoring fuel and oil tank levels on the vessel, maintaining all fuel and oil piping and machinery, transferring fuel and oil from storage to day tanks and / or end-use, and is the primary Person-In-Charge for all bunkering operations.

The Chief Mate is responsible for ensuring safe deck and mooring conditions for all bunkering operations.

General

These guidelines address procedures for the safe transferring of fuel and other oils. The purpose is to reduce the risks of oil spill, fire, damage to facilities / vessels, injury to personnel, or pollution of the environment.

Prior to proceeding with any fueling operation, a checklist form found in the appendixes of this manual SMF 7.13(a) should be completed in the **Computerized Maintenance Management Software (CMMS)** by the PIC to ensure that the crew has reduced to the best of their ability any possibility of contaminating the water via an oil spill or fueling incident. All crew involved in the fueling operation should be present and attentive to the fueling process for as long as the evolution lasts.

All vessels shall maintain their own Fueling/Fuel Transfer procedures particular to that vessel.

The *R/V Virginia* will maintain a Non-Tank Vessel Response Plan (NTVRP) through a plan provider, in which an Oil Spill Response Organization (OSRO) and a Salvage and Marine Fire Fighting (SMFF) will

be contracted as designated response organizations in the event of an “Incident / Emergency” as defined in **Section 8.2: Non-Tank Vessel Response Plan** of this manual.

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7.14 Overboarding Operations

Purpose

The purpose of this procedure is to describe policies on board VIMS vessels for working with scientific equipment over the side, referred to as "Overboarding".

Scope

Much of research ship time is spent performing science operations, which includes towing instruments, working gear over the side or fantail, and/or placing heavy objects on the seafloor. There may be independent groups working on different projects at the same time.

Responsibilities

Prior to conducting an overboard operation, that is not defined by a procedure in this manual, a risk assessment, and Job Safety Analysis (JSA) should be conducted by the Master following the **Risk Assessment / Job Safety Analysis (JSA)** section of this manual.

All crewmembers and scientific personnel, including Marine Technicians, participating in overboarding evolutions should refer to the Job Safety Analysis (JSA) regarding the operation prior to performing their duties. Crewmembers should take appropriate precautions, including wearing PPE, as defined in the JSA. Communicating preventive safety precautions can be effectively accomplished by holding a safety meeting.

Procedures

1. **Planning: Unique**, first-time, or one-time-only operations pose special difficulties and demand additional attention to planning. Planning is a two-tier function:
    a. Pre-cruise planning must address the general overboarding requirements. It is the responsibility of the Chief Scientist to work with the Master, Engineer, and Technician to ensure that all unusual requirements are raised and considered.
    b. Pre-Evolution planning occurs prior to overboarding. A Risk Assessment and JSA should be conducted as per this manual's instruction and logged in the **Computerized Maintenance Management Software (CMMS)** before beginning any overboarding evolution.

2. **Communications:** Both levels of planning will have identified special communications requirements; however, communications between the person in charge on deck, the bridge watch officer and the winch operator must be clear, unmistakable, and thoroughly tested prior to the beginning of operations.

3. **Operations:**
    a. Follow the plan.
    b. Only those with assigned duties may be on deck in the vicinity of the overboarding operations.
    c. Scientists standing by to retrieve samples or equipment must wait until the person in charge on deck gives permission before moving to the equipment.

No equipment will be put over the side or recovered until permission from the watch officer in the pilothouse is obtained. If, during launching or pickup of towed gear, it appears the propeller or rudder may be fouled, the watch officer will immediately stop the screw and refer to the emergency procedure for a **Line in the Rudder or Wheel** in this manual. When working over the side, proper safety precautions and appropriate PPE (work vests on deck, hard hats while working with overhead equipment, gloves and goggles as determined by the Risk Assessment and JSA) will be observed.

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7.15 Overboarding Equipment

Purpose

The purpose of this procedure is to set forth standards to ensure safe overboarding of equipment on VIMS vessels and to define responsibilities to ensure that there are no injuries or loss of equipment during overboarding operations on the vessel.

Scope

This procedure covers the installation, maintenance, and inspection of overboarding equipment on VIMS vessels.

Definitions

1. **Overboarding** - is defined as the use of the overboarding equipment, sometimes referred to as "working over the side."

2. **Overboarding equipment -** is defined as all mechanical gear involved in removing equipment from a location on deck and lowering it into the water. There are three general categories of this equipment:
    a. **Permanent Ship's Equipment** - is defined as machinery such as cranes, winches, capstans, blocks and rigging regularly associated with the ship and maintained by the ship's force.
    b. **Institution Scientific Equipment -** is defined as machinery such as winches, cranes and blocks owned by VIMS groups other than Marine Operations and not regularly associated with a particular ship but may be used on VIMS vessels.
    c. **Temporary Scientific Equipment -** is defined as machinery such as winches, cranes, and blocks used on the ship for a short period of time, such as the duration of a scientific operation. This machinery is not owned or maintained by VIMS or Marine Operations.

3. **The safe working load (SWL) -** is defined as the maximum mass or force that a piece of equipment is authorized to support in general service when the pull is applied in-line.

Responsibility

The safety of all people on the ship is ultimately the Master's responsibility. It is the responsibility of the Master to be familiar with the requirements of Weight Handling Gear and UNOLS Research Vessel Safety Standards to ensure compliance while the equipment is on the vessel. Specific responsibilities of the Master may be designated to other officers on board. It is the responsibility of those on board to know their jobs via this procedure.

1. **Master -** It is the responsibility of the Master to ensure that all overboarding activities are done in a safe manner.

2. **Chief Engineer -** It is the responsibility of the Chief Engineer to maintain the overboarding equipment (except blocks and loose equipment) in a safe and reliable condition. All

maintenance, failures, and repairs to vessel overboarding equipment is to be recorded in the vessel's maintenance records via **Computerized Maintenance Management Software (CMMS)**, by the Chief Engineer.

3. **Chief Mate -** It is the responsibility of the Chief Mate to maintain in safe and working condition, and test, as per Permanent Ship's Equipment below, the blocks and loose equipment. Records of Maintenance are to be kept via the **Computerized Maintenance Management Software (CMMS)**, of all testing, maintenance, failures, and repairs to blocks and loose equipment.

4. **Permanent Ship's Equipment**
   a. **Design** - It is the responsibility of the Master to ensure that the correct equipment is used in each application and the SWL is not exceeded. It is the responsibility of the Director of Marine Operations to ensure that all new equipment is designed, built, and installed to the proper specifications.
   b. **Testing -** It is the responsibility of the Master or his designee to ensure that all Weight Handling Gear is tested and logged in accordance with UNOLS RVSS.

5. **Institution Scientific Equipment**
   a. **Design -** It is the ultimate responsibility of the Master to ensure that the correct equipment is used in each application and the SWL is not exceeded. It is the responsibility of the Director of Marine Operations and the Marine Technician assigned to the cruise to collect information proving the suitability of the equipment well in advance of planned use. It is the responsibility of the person designated by the Master (usually the Chief Mate) to ensure that the equipment is installed as planned and in a safe manner.
   b. **Testing -** It is the ultimate responsibility of the Master to ensure that all Weight Handling Gear is tested when installed on the vessel and logged in accordance with UNOLS RVSS. It is the responsibility of the group that owns the machinery to prove the certified rating of the equipment to the Master prior to installation on the ship. In occasions of a fast turnaround, the Director of Marine Operations will be responsible for ensuring in a timely manner that proper testing has been done.

6. **Temporary Scientific Equipment -** Mission specific and new scientific gear is regularly produced and is expected to be used on board as new demands are made by science. It is the responsibility of the equipment owners to be familiar with acceptable standards for offshore Weight Handling Equipment and to assess each new piece of gear to ensure that the proper engineering and testing has been done prior to delivery to the ship. This equipment should have an SWL rating on it or relevant documentation that describes its operating parameters. It is the responsibility of the Director of Marine Operations to assess each new piece of gear to ensure that the proper engineering and testing has been done prior to delivery to the ship. The Director of Marine Operations can provide assistance to the science party in evaluating or specifying equipment for offshore operations. The Master ultimately has discretionary control over the use of any equipment that is used for Handling Gear.

Procedures

Hard hats are to be worn by any person involved in crane operations and work vests are to be worn by any person working near the rail where the risk of falling overboard exists. Safety harnesses are to be worn when the Master deems it necessary for safety.

Always obtain permission from the watch officer prior to putting anything over the side of the ship.

Ship's **Stability / Ballast** procedures of this manual should always be considered prior to any overboarding operation.

Heavy Equipment Standing Operating Procedures are as follows:

1. ONLY PERSONNEL QUALIFIED BY THE CHIEF ENGINEER USING FORM **SMF: 6.5.3** SHALL OPERATE THE CRANE, A-FRAME, J FRAME, TRAWL WINCHES, CTD WINCH, ANCHOR WINDLASS
2. Before using any equipment, the operator shall visually inspect to insure there are no deficiencies or irregularities with the equipment, if there are deficiencies tag out the equipment using the **Lock Out / Tag Out Procedures** until the problem is corrected.
3. The operator SHALL NOT engage in any activity that will divert their attention while operating any equipment.
4. Ensure all personnel working on deck within range of the heavy equipment are wearing hard hats and other appropriate PPE for the evolution being conducted.
5. The operator will respond only to signals from a person designated by the operator while operating deck equipment.
6. The operator MUST obey a STOP signal at all times no matter who gives the signal.
7. DO NOT move a load over people.

Record Keeping

The Master is responsible for maintaining a log of all weight handling gear tests in accordance with UNOLS RVSS

The Chief Engineer will maintain maintenance logs via the vessel's **Computerized Maintenance Management Software (CMMS)**, for overboarding equipment, excluding blocks and loose equipment.

The Chief Mate will maintain a system for logging and recording all testing of blocks and loose equipment.

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7.16 Personal Protective Equipment (PPE)

Purpose

The purpose of this procedure is to establish guidelines for the use of Personal Protective Equipment (PPE) aboard VIMS vessels. To this end, all appropriate safety precautions relevant to the work at hand must be observed.

Reference

1. UNOLS Safety Training Manual
2. OSHA 3079 – Respiratory Protection

Responsibilities

It is the responsibility of the Master to determine what PPE will be required during vessel operations. The Master shall communicate to the scientific party, and to the crew, what PPE is required based off the JSA, or procedures established in this manual. The JSA will be reviewed and approved by the Marine Safety Officer and reviewed by the DPA.

The Master is responsible for ensuring that adequate PPE is maintained on board in inventory, that, when necessary, the PPE is inspected, and that crew are trained in the use of PPE.

Each crew member or scientific personnel is responsible for ensuring that they have the proper PPE to complete the operation they are tasked with, and that they are using that equipment properly. If that person does not have the appropriate PPE to complete a task, they are responsible for contacting the Master or Chief Scientist.

Procedures

1. The Master will refer to the **Risk Assessment / Job Safety Analysis (JSA)** when determining what PPE is to be required for vessel operations.
2. The Master shall establish requirements to ensure workplace safety as conditions change. Required PPE standards may be waived in an extreme emergency requiring prompt action to save life, property or to protect the environment.
3. At sea, and in port as determined appropriate by the Master, all personnel working on open decks where danger of going overboard exists, working over the side, or at any other time as required by the Master must wear approved work vests. Work vests shall be stored and maintained as follows:
    a. Work vests must be stored so as not to be confused as life jackets.
    b. Work vests will at no time be used as substitutes for life jackets.
    c. Work vests will be inventoried monthly.
    d. Work vests will be inspected monthly for:
        i. Wear and tears
        ii. Appropriate reflective material
        iii. Zipper and other fasteners operational
        iv. Lighting

v. Overall serviceability

4. All personnel in the vicinity of vessel crane operations, including shore cranes, or under the A-Frame / J-Frame / Pedestal Crane during operations must wear approved hard hats.
5. All personnel going aloft must wear safety harnesses as per the **Working Aloft** procedure of this manual and use them properly. The Master may also require safety harnesses for individuals working over the side or working on weather decks during inclement weather.
6. All personnel in machinery spaces must wear approved ear protection while engines or other devices generating high noise levels are in service.
7. Eye and face protection: All operations with bench or hand-held grinders, chippers, or other tools that may cause eye hazards require eye or face protection. Eye protection may also be required in the wet laboratory when working with chemicals. It is the responsibility of individual supervisors to make the determination and enforce the use of appropriate equipment. Full-face protectors, if required, should be provided by the Chief Scientist for science use in the labs.
8. Personnel utilizing the vessel's work boat must wear approved personal flotation devices appropriate to the prevailing conditions.
9. Respirators shall be provided when required. Should a respirator be required then a fit test should be conducted per OSHA recommendations.

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7.17 Confined Space Entry

Purpose

The purpose of this procedure is to set forth policies concerning confined space entry, both at sea and in port.

Responsibility

It shall be the responsibility of the Master to ensure that policies set forth in this procedure are followed. The Master may designate an individual to coordinate the proper training of personnel in confined space entry.

Definitions

1. **Confined Space** – A space that has limited or restricted means of entry, is not designed for continuous occupancy, and is large enough and configured so that a person can enter the space and maneuver well enough to perform tasks.
2. **Gas Free Certificate** – A gas free certificate is a document issued by a Marine Chemist stating tests were conducted and the status of a space at the time of his or her test. The certificate will also indicate the type of work that is permitted in the space (Safe for Workers, Safe for Hot Work, etc.).
3. **Marine Chemist** – An individual recognized by the National Fire Protection Agency (NFPA) as qualified to test confined spaces and determine their condition with respect to oxygen sufficiency, explosive vapors, or toxic gases.

General

All confined spaces should be assumed to be dangerous until proven otherwise. Such spaces must be ventilated and tested prior to entry.

Any sealed tank (i.e.: fuel tanks) will require a gas free certificate by a certified marine chemist prior to entry. Vessel personnel are not permitted to enter a sealed tank. Entry will be by appropriate vendors only.

A confined space that is not a sealed tank (i.e.: chain locker) will be ventilated for one hour prior to entry. The person entering the confined space will wear an O2 monitor and should not be entered without attendance of someone outside the space. This individual must be knowledgeable in identifying warning symptoms in the actions of those in the space that something is wrong, knowing what to do if something is wrong and how to get assistance.

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7.18 Lock Out / Tag Out Procedures

Purpose

The purpose of this procedure is to establish a system for locking out and tagging out energy systems to reduce the potential for injuries or damage due to the inadvertent operation of a system.

References

1. Title 29 CFR 1910.147

Responsibility

It shall be the responsibility of the Master to ensure that a lockout/tag out system is in place and is being used onboard VIMS vessels. It shall be the responsibility of the Chief Engineer to monitor the lockout / tag out system and to maintain the log used to record lockout/tag out activity.

General

Locking out and tagging out equipment, either when maintenance is being performed on or around certain equipment which present a risk to personal safety, or when equipment becomes unsafe to use, provides a safe work practice that should safeguard life, property, and the environment from injury or damage.

The purpose of Lock Out / Tag Out (LOTO) practices are intended to temporarily isolate an item of equipment, or system, from its energy source, from unintended operation, or dangerous contact with individuals. This is done so that inspection, maintenance, or repair actions can be done safely. Lock out actions involve blocking the flow of energy. Typically, this is done by opening a circuit breaker, closing a valve, disconnecting a cable, or interrupting other similar power source. Tag out actions may involve installing a visual notice on an energy-isolating device to alert others of the shutdown condition. Such actions should establish a safety "zone" within the equipment and / or system(s) to reduce risk, contain possible dangers, and alert other individuals to potential safety hazards.

Primary hazards associated with a Lock Out / Tag Out involve direct contact with a source of energy. A number of energy sources are found onboard vessels. These include, but are not limited to;

1. Electricity
2. Hydraulics (fluid power)
3. Pneumatics (compressed air)
4. Internal combustion engines
5. Hot surfaces
6. Falling objects

Particular events that may trigger a Lock Out / Tag Out may be, but are not limited to:

1. When performing maintenance LOTO a piece of equipment that:
    a. Stores energy

   b. If energized during maintenance may result in personal injury.
   c. That if energized may cause damage to the equipment.
2. When equipment or systems become excessively worn or damaged, and are no longer safe or suitable for intended use, it should be taken out of service and / or tagged out of commission. The tag is a label or other means of alert placed on the equipment, or on its control that warns others of the item's unsafe condition and that it should not be used.

Training on the Lock Out / Tag Out policy will be conducted and logged on to the vessels **Computerized Maintenance Management Software (CMMS)**, will be conducted on an annual basis. Training will also be a part of **Crewmember Orientation**.

The Lock Out / Tag Out policy and practices apply to all crew, vendors, shipyard workers, or any other person on board conducting maintenance or inspections of equipment when a risk exists regarding that work.

Procedures

1. Tags, markings, or other labels should be distinguishable in their appearance. The tag is a label or other means of alert or attention placed on the machine, equipment, or device or on its control that warns others of the item's potentially unsafe condition. Tags must identify who placed the tags. Tags, marking devices, or labels should be maintained available onboard and may be produced on the boat if of appropriate fashion to be sufficiently conspicuous in marking a danger.
2. Tags should be attached to the item so that it should not come loose, become separated, weathered, or be easily removed.
3. Tag Out applies to all types of vessel equipment: permanent and portable. Items that may require periodic attention include, but are not limited to, the following:
   a. Air operated tools.
   b. Electrically operated hand tools including drill motors, grinders, circular saws, etc.
   c. Electrical appliances including heaters, fans or blowers, portable pumps, stoves, and microwave ovens, etc.
   d. Light fixtures, especially high wattage spotlights or flood lights, drop lights, etc.
   e. Electrically powered navigation equipment including radars, radios, fathometers, etc.
   f. Electric motor driven pumps: bilge, fire, fuel; steering, etc.
   g. Battery cables or electrical wiring, etc.
   h. Electric motor driven deck winches, gears, chain drives, level -winds, pawls, etc.
   i. Galley equipment, etc.
4. Tags should be marked with "Do Not Operate" and should be attached to the item and/or its power source, when appropriate. **Only the crew member who placed tags is allowed to remove these tags.**
5. Whenever vessel maintenance and repair are being conducted that requires Lock Out / Tag Out, "upstream" energy sources that can present a hazard should be isolated. The sources should be disconnected, de-energized, depleted, or eliminated prior to working on the equipment. Actions necessary for these sources includes, but are not limited to:
   a. Securing and tagging engine controls in the wheelhouse before allowing work to commence on propulsion or auxiliary engines, shaft, propeller, rudder, etc.;

b. Turning off and tagging electrical sources and controls (circuit breakers and/or switches, batteries, capacitors) supplying radars, starters, radios, steering motors, spotlights, etc.
c. Securing and tagging appropriate hydraulic or electrical controls for a steering system component, winch, or power packs, etc.;
d. Draining / bleeding off pressure in air receivers (and securing electrical supply to the air compressor's motor or other pressurized lines in the system to be opened, etc.
e. Securing valves as necessary to isolate fire main or bilge system piping (or securing the pump). Securing sea valves requires attention to maintain watertight integrity.

After an item has been repaired, and in preparation to return it to service, the energy source control should be unlocked, and the tag removed only by the same person who locked out/tagged out the system or equipment.

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7.19 Hazardous Materials

Purpose

The purpose of this procedure is to define the storage and use of flammable and combustible materials.

Scope

This procedure is intended to address the policy for bringing on board Hazardous Material, including materials that are flammable or combustible. This procedure is not intended to apply to common household products.

Reference

1. 46 CFR 147.45
2. 49 CFR 171.8

Definitions

1. **Hazardous Material** – means any substances in quantities or forms that may pose a reasonable risk to health, property, or the environment. HAZMATs include such substances as toxic chemicals, fuels, nuclear waste products, and biological, chemical, and radiological agents.
2. **Flammable Materials** - are defined as any liquid which gives off flammable vapors (as determined by flashpoint from an open-cup tester, as used for test of burning oils) at or below a temperature of 80 °F.
3. **Combustible Materials** - are defined as any liquid having a flash point at or above 140 °F (60 °C) and below 200 °F (93.4 °C).

Responsibilities

The Master shall be responsible for ensuring that any item brought on board that meets the definition of a Hazardous Material shall be accompanied with a Material Safety Data Sheet (MSDS), and that the crew is trained on that MSDS. The Master will be responsible for ensuring that the scientists meet the responsibilities defined in this section for providing all necessary storage, spill response, and first aid materials as defined by the material's MSDS.

Scientists will work with the Master to develop a safe storage plan any Hazardous material as defined in the MSDS. Scientists will also be responsible for providing the Material Safety Data Sheet to the Master for any Hazardous Material brought on board. The Scientists will also be responsible for providing all necessary spill response and first aid materials, as per the MSDS, to respond to a spill, or exposure to the material.

Scientists are responsible for immediately reporting any spills of Hazardous Materials to the Master.

Procedures

1. No hazardous, flammable, or combustible liquids may be stowed in any accommodation, control, or service space unless they are being stored in a designated, marked, and approved paint locker.
2. No more than 19 liters (five gallons) of flammable liquids may be stowed in any machinery space. The flammable liquids must be in containers of 3.8 liters (one gallon) or less.
3. No more than 208 liters (55 gallons) of combustible liquids may be stowed in any machinery space.
4. Hazardous, flammable, or combustible materials brought on board by the Scientific Party will be accompanied with a MSDS provided to the Master. Any excess of 7.6 liters (two gallons) must be stowed in a storage locker that is approved by the Master.
5. Flammable and combustible liquids used as fuel for portable auxiliary equipment (such as the outboard motor for the ship's tender) must be stored in:
    a. Integral tanks that form part of the vessel's structure.
    b. An independent approved tank. (To determine if a tank is approved reference the CFR of this section)
    c. A portable approved outboard fuel tank. (To determine if a tank is approved reference the CFR of this section)
6. Each portable container of flammable or combustible liquid used for portable auxiliary equipment must be stowed in a paint locker or an open location designated by the master.
7. Fuel tanks for portable auxiliary equipment using flammable or combustible liquids may only be refilled on a vessel:
    a. By using an approved container which has a capacity not exceeding 23 liters (6 gallons)
    b. Portable containers or portable outboard fuel tanks may be refilled from a larger container of flammable or combustible liquid on the weather deck of a vessel provided that:
        i. A drip pan of adequate size is used to collect any drippings; and
        ii. At least one Coast Guard approved Type B, Size I, fire extinguisher is within three meters (9.75 feet) of the refilling location.

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7.20 Working Aloft

Purpose

The purpose of this procedure is to establish the guidelines for working aloft aboard VIMS Vessels.

Definition

Working aloft or over the side means work that is performed at a height and involving a risk of falling, resulting in an injury.

For the purpose of this section, in regard to the *R/V Virginia,* any work involving transiting from the O1 to O2 Deck and working on the O2 Deck is not considered to be working aloft. Any person working on the O2 Deck shall still be required to notify the Officer of the Watch (OOW) while conducting their work and shall notify the OOW when the work is completed.

Procedures

Under no circumstances shall crew members or personnel work aloft near exhausts that are actively discharging gasses.

1. While working aloft all proper PPE and clothing appropriate for the task shall be donned and worn at all times.
2. Personnel going aloft shall inspect all safety equipment. This safety equipment shall include, but not be limited to safety harnesses, tethers with appropriate shackles or fastenings, work vests, ladders and lines to secure ladders or staging.
3. Personnel working aloft should ensure that the area is clear of any slipping hazard.
4. Should the personnel be working close to, or over the side, then a life buoy should be kept at the ready at all times.
5. If deemed necessary by the Master, then a rescue boat shall be ready for immediate deployment.
6. The Master, or officer of the watch should be notified when a person is going aloft, and when the operations aloft have been completed.
7. Unless in the case of an emergency, and approved by the Master, personnel should not go aloft in inclement weather.
8. The personnel working aloft shall be attended to by another crew member during operations.
9. Any tools being used while working aloft should be fixed to the person performing the maintenance using lanyards or raised and lowered in a device such as a bucket.

10. Persons attending the personnel working aloft should remain at a safe distance from falling tools, and any tools being used should be used with special care not to be dropped on the deck or equipment.

11. Upon completion of the jobs, all equipment must be removed from the site and warning notices / isolated systems restored to normal condition as necessary.

12. Concerned personnel must be notified of completion of the job.

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7.21 Hot Work

Purpose

The purpose of this procedure is to establish the guidelines for conducting hot work aboard VIMS Vessels

Definitions

Hot Work - Hot work includes, but is not limited to, any work requiring the use of electric arc or gas welding equipment, cutting burner equipment or other forms of naked flame, as well as heating or spark generating tools which are not certified for use in hazardous areas.

Procedures

No person on board should conduct any hot work without the proper training and certification appropriate for the job, and without notifying and receiving permission from both the Master and the Engineer.

Hot work is not considered a part of routine maintenance, and unless deemed an emergency by the Master, shall only be conducted dockside, or if possible, in a shipyard. Proper ventilation shall be established prior to beginning hot work and a fire and safety watch shall be established where a fire hazard may be present, to include the opposite side of a bulkhead. Under no circumstance shall hot work be conducted on a deck or bulkhead that composes a part of a tank holding flammable or combustible materials.

The following procedures should be followed when conducting hot work:

1. A hot work permit must be issued prior to beginning work.
2. Ensure the space is well ventilated.
3. If flammable gases are suspected, then test before and during the hot work task.
4. Check that the immediate area is free from combustibles.
5. Check neighboring or connected areas (such as other side of bulkhead) or internal areas (such as inside a tank) that may be heat affected to make sure they are free from flammables and combustibles.
6. Bulkhead insulation may need to be removed.
7. If appropriate, use portable barriers or shields and warning signs.
8. A fire extinguisher must be immediately available on site
9. Maintain a dedicated fire watch for both the immediate area and any potentially affected neighboring/ connected areas throughout the full operation.
10. Proper use of Personal Protective Equipment, such as welding mask/ goggles, gloves, apron

11. Make sure that the welding and burning equipment is properly maintained and serviced.

12. Welding and burning equipment must be checked by a competent person before every use. Check that the hoses, cables and connections are in good condition.

13. Check that flame arrestors are in place on both the oxygen and acetylene lines at both the torch and bottle ends.

14. Fire watch must extend to 30 minutes beyond the completion of the work.

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7.22 Discharge Incidental to the Normal Operation of the Vessel

Purpose

This chapter only applies to the *R/V Virginia*.

The purpose of this procedure is to ensure compliance with the US EPA "Vessel General Permit for Discharges Incidental to the Normal Operation of Vessels" (VGP) aboard the *R/V Virginia*.

Responsibility

The Master is responsible for general compliance with the VGP.

The Chief Mate is responsible for controlling all deck wash down and runoff discharges.

The Chief Engineer, as described in **Stability / Ballast**, is responsible for all bilge and ballast handling operations.

The Master, as described in **Waste Management**, is responsible for the discharge of sewage, gray water, and trash.

The Director of Marine Operations is responsible for requesting and maintaining authorization under the permit.

The Port Engineer is responsible for dry-dock maintenance items required by the permit and the associated record keeping.

References

1. US EPA "Final 2013 Vessel General Permit for Discharges Incidental to the Normal Operation of Vessels (VGP)." A copy is available on the ship and can be found on: https://ofmpub.epa.gov/apex/vgpenoi/f?p=102:101::::::

General

The *R/V Virginia* holds a permit for the following discharges:

1. Anti-fouling hull coatings
2. Ballast Water
3. Cathodic Protection
4. Controllable Pitch Propeller Hydraulic Fluid, and other Oil-to-Sea Interfaces
5. Deck Washdown and Runoff
6. Distillation or Reverse Osmosis Brine
7. Firemain Systems
8. Greywater Mixed with Sewage
9. Refrigeration and Air Condensate Discharge
10. Seawater Cooling Overboard Discharge

VIMS William & Mary Virginia Institute of Marine Science	7.22 Discharge Incidental to the Normal Operation of the Vessel	
Marine Ops:	Originator:	Approved By:
Safety Management System	T. R. Kirkpatrick	Tim N. Turner

Procedure

The Master, Chief Engineer, and Chief Mate will familiarize themselves with the referenced permit as it applies to discharges from the vessel and the requirements for maintaining records of discharges. Note that the permit only limits activities in "waters of the United States" (extending to the outer reach of the 3-mile territorial sea"). The following limitations specifically apply to the *R/V Virginia*:

1. Vessel operators must "...minimize the introduction of on-deck debris, garbage, residue and spill...," "...[the] presence of floating solids, visible foam, halogenated phenol compounds, and dispersants, or surfactants," "rust (and other corrosion by-products), cleaning compounds, paint chips, non-skid material fragments, and other materials associated with exterior topside surface preservations." "If deck washdowns or above water line hull cleaning will result in a discharge, they must be conducted with non-toxic and phosphate-free cleaners and detergents."

2. "Environmentally Acceptable Lubricants" (EALs) will be used in all oil-to-sea interfaces (specifically the Controllable Pitch Propeller system.)

3. Chain locker effluent should not be discharged within the area covered by the permit except as necessary for anchoring the vessel and washing the anchor and chain upon recovery.

4. Fire main system discharges are allowed but limited to those where "the intake comes directly from the surrounding waters or potable water supplies and there are no additions to the discharge."

5. Graywater discharge in port must be minimized, with minimal introduction of kitchen oils. Vessel owner/operators must use phosphate free and non-toxic soaps and detergents if they are discharged into waters subject to the VGP.

6. Hull cleaning should be done in a dry dock with adequate controls on the runoff water.

7. Pre-existing law regarding sewage, ballast water and oily waste discharge is also addressed under this permit.

Inspections and Record Keeping

Inspections and recordkeeping requirements are described in detail in section 4 of the Permit. Core requirements include:

1. The Master or a designated officer will make routine (once per week or once per voyage, whichever is more frequent) visual inspections of discharges and spaces with a potential to discharge to the sea. This inspection will be recorded in the vessel's **Computerized Maintenance Management Software (CMMS)**, including any deficiencies found.

2. Conduct a comprehensive annual self-inspection, covering all potential areas for discharge that can safely be accessed without drydocking. This inspection will be recorded as an entry in the

Computerized Maintenance Management Software (CMMS), including any deficiencies found.

3. All inspection records must be made available to EPA on request. An Annual Report must be filed electronically with EPA.

4. A drydock inspection report will be prepared by the Director of Marine Operations documenting compliance with VGP requirements (e.g. chain locker cleaning, removal of all marine growth from the hull, etc.) and must be made available to EPA on request.

5. Keep written records pertaining to covered discharges, where not already covered (e.g. ballast log, garbage log, Oil Record Book). For example, log deck and anchor washdowns, painting evolutions, sewage pumping, etcetera.

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7.23 Small Boat Operations

Purpose

The purpose of this procedure is to set forth guidelines for boat operations and the qualifications for small boat operators onboard the *R/V Virginia*.

Responsibility

Boat operations are conducted in the direction of the Master. The Chief Mate shall oversee the training of operators while qualified operators give practical instruction.

The Chief Engineer shall be responsible for engine maintenance, both periodic and planned, whether done on board or contracted to an outside source. Maintenance records shall be maintained on the vessel's **Computerized Maintenance Management Software (CMMS)** system and shall be the responsibility of the Chief Engineer.

The Chief Mate will be responsible for the general overall boat maintenance and readiness conditions including providing adequate quantities of stabilized non-ethanol gasoline. The Chief Mate will collaborate with the Chief Engineer as needed to address maintenance and repair issues.

The Chief Mate or other person designated by the Master is in charge of the deck during launch and recovery of boats. While a boat is underway, the boat operator is in command and responsible for the embarked personnel and safe operation of the boat.

General

The ship normally carries a Rigid-Hulled Inflatable Boat (R.H.I.B.) with an outboard motor like a ship's boat. The vessel's boat is intended to be used in support of the scientific effort although, at the discretion of the Master, they may be used for other purposes as deemed appropriate.

The Chief Mate or other person designated by the Master shall be responsible for inspection of the small boat on a monthly basis, and prior to deployment to ensure that the R.H.I.B. is properly inflated and ready for deployment at all times.

Procedures

The ship's boat registration will be maintained with the State of Virginia. A copy of the registration will be kept on the *R/V Virginia*.

The Master will determine which personnel will be qualified to use the small boat, using **SMF: 6.5.4 Small Boat Handler Qualifications** of this manual. In some cases, personnel under training will be allowed to operate under supervision of a trained operator. Special care must be exercised to keep weights to a minimum during all hoisting operations so as not to overtax the lifting bridle or boatlift points.

The operator shall complete the **SMF 7.23: Small Boat Ops. Checklist**. This is to ensure:

1. That the boat is in proper condition, adequately inflated and seaworthy.
2. That the boat contains equipment as required by the USCG for the size motorboat being operated. The required equipment is kept in good condition and up to date and ready for immediate use. A watertight boat box is provided for those items that must be kept dry.
3. That a VHF radio is on board, fully charged and tuned to the agreed upon frequency, is turned on and ready for use.
4. That the boat is operated in a safe manner observing all applicable rules of the road.
5. That the number of persons and gear does not exceed the manufacturer's weight limits and that the weight is evenly distributed for proper operation under the prevailing conditions.
6. That a radio check is conducted prior to getting underway from the ship, and regularly thereafter as agreed to by the bridge.

The boat operator will follow all special instructions given by the ship's watch officer.

Launch / Recovery

The R.H.I.B. will be launched and recovered on the starboard side using the ship's deck (pedestal) crane. All personnel involved in the launch procedure shall wear hard hats. Tag lines are fair lead fore and aft with positive control using cleats or other securing points. The small boat is equipped with three lifting points and a lifting bridle.

During launching the crane operator and line handlers will follow the directions of the Chief Mate or other individual designated by the Master for launch and recovery.

The procedure for launching the RHIB is as follows but may be modified to suit the situation at hand:

1. The boat is raised from the 02 deck, lifted over the rail, lowered below the 01deck to the loading position on the Main Deck under the J-frame Crane, and is secured.
2. Gear may be loaded, and the operator climbs aboard with the required safety gear and takes position on the outboard side facing the ship.
3. On signal, the boat is swung out and lowered away. Once positively afloat, the operator releases the crane hook, keeping the bridle inside the boat.
4. As the hook is being raised, the line handlers provide long leads fore and aft to keep the boat safely alongside.
5. The boarding ladder is deployed over the side. Designated persons board the boat and additional gear is passed down if needed.
6. Once all hands are seated and the motor is running, communications have been established with the bridge, then the bridge will give permission for the boat to get underway.
7. Upon recovery, the process is essentially reversed, the boat is returned to the deck and secured as before.

Note: Once the boat has been launched, the operator is in charge and responsible for all people aboard. All lines are to be safely secured inside the boat.

Reporting

The checklist appended as **SMF 7.23: Small Boat Ops. Checklist** will be used in small boat operations aboard the *R/V Virginia* and can also be found in the **Computerized Maintenance Management Software (CMMS)**.

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7.24 Towing Procedures

Purpose

The purpose of this section is to establish a procedure for both towing and being towed by another vessel.

Responsibilities

The Master is responsible and accountable for ensuring that any gear on board utilized for being towed is maintained and in safe working order. The Master is responsible for training the crew annually on the procedures for being towed. In the case of the *R/V Virginia* this training is a part of the vessel's NTVRP Onboard Emergency Procedure (OEP) Exercise.

It is the Master's responsibility to determine when and if it is necessary to request a tow and may decline to accept the tow if the Master deems the towing vessel or tow gear to be unsafe to the crew and vessel.

General

These guidelines address the procedures for towing. Due to the nature of the intended work of VIMS vessels, the vessels' operational equipment, and the required endorsements of the Officers, VIMS vessels will not engage in towing operations or take any vessels under tow. Should a distress emergency arise in the vessel's vicinity then it will proceed to assist in aid, and if necessary, take on persons in distress, but will not render a tow to a disabled vessel.

Should a VIMS vessel require a tow the Master and crew will rely on the expertise of the Master and crew providing the tow, however the preferred towing procedures will be communicated to the authorized vessel providing the tow.

Each vessel is responsible for establishing its own towing procedures and maintaining those onboard at all times.

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Section 8: Emergency Preparedness

8.1 Emergency Preparedness

Purpose

The purpose of this procedure is to establish instructions concerning emergency preparedness for VIMS vessels.

References

1. Training and Drills, 46 CFR §199.180
2. Operational readiness, maintenance, and inspection of lifesaving equipment. 46 CFR 199.190
3. Shipboard Inspection and Testing of Immersion Suits, NVIC 01-08
4. Non-Tank Vessel Response Plan (NTVRP)
5. Shipboard Oil Pollution Emergency Plan (SOPEP)
6. VIMS Emergency Response Plan

Responsibilities

The responsibility of emergency preparedness rests with the Director of Marine Operations. It is his / her responsibility to ensure that adequate plans, in co-ordination with the Master of the vessel, are in place and personnel are adequately trained to deal with emergency situations.

The Master is responsible for ensuring that the vessel has the required equipment and supplies, in sufficient quantity, to be able to react decisively to an emergency on board. The Master is responsible for inspecting and maintaining shipboard lifesaving and firefighting equipment, and that shipboard personnel are adequately trained to use such equipment for emergencies following each vessel's individual emergency procedures. The Master shall ensure that the Director of Marine Operations is notified of all emergencies.

In the case of the *R/V Virginia* It is the responsibility of the Master to ensure that the Non-Tank Vessel Response Plan (NTVRP). Any changes to the NTVRP shall be documented and sent to the Director of Marine Operations for review and incorporation. Review of the NTVRP should be accomplished annually.

The Emergency Response Plan, Station Bill, and Emergency Procedures for each vessel will be reviewed annually and confirmation of these reviews will be logged and approved by the Master, Director of Marine Operations, and Marine Safety Officer via the **Computerized Maintenance Management Software (CMMS)**.

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Procedures

8.1.1. Drills

As per the guidance in (46 CFR §199.180), drills must, as far as practicable, be conducted as if there were an actual emergency.

Every crewmember and non-crewmember on board must participate in a minimum least one Abandon-Ship Drill, one Man Overboard, and one Fire Drill every month that the vessel is underway. Further, a Man Overboard Drill and Fire Drill for the crew and non-crewmembers on board must take place within 24 hours of the vessel leaving a port if more than 25 percent of the crew have not participated in abandon-ship and fire drills on board that particular vessel in the previous month.

Emergency drills shall be conducted under the direction of the Master as per the guidance of the U. S. Coast Guard and other regulatory bodies/contractual agreements. In addition, the Master shall evaluate the adequacy of shipboard personnel to address emergency situations and shall conduct such training as deemed necessary to adequately train shipboard personnel in various emergencies. After drills and equipment have been properly secured the Master will hold a debrief with the Crew to discuss the drill, lesson learned, safety precautions and if communication was effective.

A drill schedule will be established in the vessel's **Computerized Maintenance Management Software (CMMS)**. The CMMS will prompt the crew on which drills to be conducted as they are scheduled, but that should not restrict the crew from conducting a drill when they recognize that a drill needs to be conducted as an exercise to correct a near miss or non-conformity. In addition to the monthly emergency drills the following drills shall be conducted no less than annually:

1. Grounding
2. Collision / Allision
3. Loss of Power
4. Loss of Steering
5. Towing
6. Emergency Assistance
7. Security
8. Oil Spill Response
9. Medical Casualty

Reporting

All drills will be documented in the deck log and on the **Computerized Maintenance Management Software (CMMS)** to be approved by the Master and reviewed by the Marine Safety Officer. The form for reporting drills can also be found in the appendixes of this document under **SMF: 8.1.1: Drills**.

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8.1.2. Training

All of the following topics should be discussed annually during scheduled vessel training, or in response to a Near Miss or Corrective Action. This discussion can be a part of the Employee Annual Review (**SMM 6.1: Resources**).

1. Training topics should include, but not be limited to:
    a. Lifesaving procedures and appliances
    b. Fire Fighting procedures and equipment
    c. Lock Out – Tag Out procedures
    d. Working Aloft / Divers in the Water / Over boarding Equipment
    e. Risk Assessment and Operational Hazards
    f. Security Awareness
    g. Fueling Procedures / Oil Spill Response
    h. Food Safety / Handling and Hygiene
    i. Waste Management
    j. Anchor Handling Procedures
    k. Safety Management System Manual Training
    l. Other Training: at the Master's discretion topics may include:
        i. Change in procedures
        ii. In response to an incident / near miss
        iii. Update in regulations, technologies, etc.
        iv. After a serious maritime industry investigation by NTSB

Reporting

All training will be documented in the **Computerized Maintenance Management Software (CMMS)** under the scheduled forms **SMF 8.1.2: Training** to be approved by the Master and reviewed by the Marine Safety Officer. Training shall also be documented in the Deck Log.

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8.1.3. Safety Inspections - The Master shall ensure that safety equipment is maintained in a ready condition and inspected regularly to adequately ensure its readiness.

Inspections for Safety and Fire Fighting Equipment will be conducted and logged on the intervals defined by the **Computerized Maintenance Management Software (CMMS)**. The following procedures should be followed when conducting an inspection of any Safety or Fire Fighting Equipment.

1. First Aid:
    a. **AED** – The AED should be inspected as per the owner's manual instructions and per the prompting on the vessel's CMMS at least once every month.

b. **Chemical Shower** - The vessel showers (as applicable), located in the heads, are considered to be the vessel's chemical showers due to their close proximity to the Wet Lab and Engine Room. Proper signage will be posted on the onboard showers. Monthly inspections will be conducted.
c. **Eye Wash Stations** – As applicable, periodic visual inspections should be conducted and logged in the CMMS monthly to ensure that the tamper seal has not been broken, and that the liquid inside is not discolored.
d. **First Aid Kit** – An inventory of supplies should be conducted and logged in the CMMS once every three months, and new supplies ordered as necessary. This inventory includes taking stock of all the pre-packaged medications and medical supplies and ordering supplies that are running low.
e. **Trauma Kit** –The trauma kit should be inspected, inventoried, and logged in the CMMS once every three months, and / or after each use. Inspection is for wear and damage to the kit or packaging, and the inventory should order any supplies needed.

2. PPE:
   a. **PPE** - Personal Protective Equipment should be inspected prior to each use and is the personal responsibility of the user. Personnel will be trained in how to inspect and when to use PPE during the new crewmember safety orientation. Shipboard equipment including issued eye or hearing protection and hard hats will be visually inspected for damage monthly.
   b. **Work Vests** – Work vests will be inspected for tears, damage, worn zippers or clips, and worn reflective material monthly.
   c. **Work Vest Lights** – Work Vest Lights have an expiration date and will be visually inspected when the work vest is inspected each month and replaced as needed.
3. Safety:
   a. **EPIRB / EPIRB Battery** – The EPIRB battery is inspected every two weeks as per the manufacturer's recommendation and in accordance with the **Life Saving and Survival Equipment** of this manual. The EPIRB registration shall be kept current and on board the vessel.
   b. **EPIRB Hydrostatic Release** – The hydrostatic release should be inspected every two weeks for visual damage, and to ensure it has not been triggered. The expiration date should be verified. The expiration date is a hole punched into the month and year on the release itself.
   c. **Flares** – Flares are located under the chart table and their expiration date should be verified as well as an inventory and visual inspection for damage once a month.
   d. **Life Jackets** – As per the **Life Saving and Survival Equipment** section of this manual an inventory of all life jackets should be conducted monthly to ensure there is a life jacket for each person on board, as well as a visual inspection should be conducted every month to inspect for any rips, tears, damage, missing fastenings, sound signaling device, and lights.
   e. **Life Jacket Lights** – The LED lights on the life jackets are equipped with Lithium AA batteries. The lights should be turned on every 3 months and should be replaced every five years.

f. **Life Raft Hydrostatic Release (As applicable)** – The hydrostatic release on the life raft has an expiration date which is logged in the Safety Inspection Sheet, and should be replaced when the release expires

g. **Life Raft (As Applicable)** – The life rafts should be inspected monthly as per the **Life Saving and Survival Equipment** section of this manual. Life rafts should be inspected for signs of damage or wear. The hold down straps should be inspected as well as the fastenings and pelican hooks that hold the life raft down. The painter should also be inspected for visual wear, as well as the hydrostatic release. The life raft is required to be fully inspected by a certified inspector annually.

h. **Life Rings, Throw Ropes, Strobes** – Life Rings should be inspected monthly as per the **Life Saving and Survival Equipment** instruction in this manual. The Life Rings should be inspected every month for signs of wear. They should be inspected for legibility of the vessel's name as well as for wear of the reflective material. The throw ropes should be inspected for serviceability, wear and tears. The strobe lights should be held upright and tested for illumination. Any smoke release system shall be verified that they have not expired.

i. **Immersion Suits (As Applicable)** – Immersion Suits shall be inspected monthly as per NVIC 01-08, and as per the **Life Saving and Survival Equipment** instruction in this manual. In accordance with Coast Guard and manufacturer recommendations, immersion suits shall be air tested every three years. For suits that are over 10 years in age the suits should be air tested by a certified repair facility annually.

4. Fire Fighting:

a. **Fire Extinguishers** – The fire extinguishers should be inventoried and inspected monthly for evidence of having been tampered with, that the pull pins are intact, visual damage, and in the case of dry chem and wet chem (K), that the extinguisher has a full charge. The Fire Extinguishers are professionally inspected by a third-party contractor once every year.

b. **Galley Hood (*R/V Virginia*)**– As applicable, the fixed firefighting system in the galley should be inspected with the same standards and regularity of the portable extinguishers, including an annual inspection by a third-party contractor.

c. **CO2 Bottles** – As applicable, the CO2 bottles are inspected by a third-party inspector annually.

d. **Fire Stations** – Fire stations should be inspected monthly for the serviceability of the hoses, including wear and tear, that the nozzle is present and can be opened, that the valve is not seized, and that the hose spanner wrench is present. The inspection should be logged on to the inspection card with the inspector's initials.

e. **Fire Pumps** – As applicable, fire pumps should be run monthly, the suction and discharge pressure should be recorded, and the pump and piping visually inspected for leaks or damage.

f. **Bilge Alarms** – Bilge Alarms should be tested monthly by lifting the float and waiting for the alarm.

g. **Fire Control Panel (*R/V Virginia*)** – As applicable, the fire control panel is inspected annually by a third-party contractor but should be tested every three months by pressing the Lamp Test button.

i. **Smoke / Heat Alarms –** The smoke alarms are tested annually by a third-party contractor. The alarms continually self-test and should one malfunction or be damaged the green light will flash red and the fire alarm panel will sound an alarm with the message "System Malfunction". A semi-annual visual inspection should be conducted by the third-party contractor for the smoke and heat alarm systems.
ii. **General Alarm –** The general alarm should be inspected prior to getting underway or at least once a month.

h. **Ventilation Shut Off** - As applicable, the ventilation shut off and engine / generator shut off panels should be inspected prior to getting underway or once a month. If the system is not operational and the vessel should not sail.
i. **Fuel Shutoff** – As applicable, the cables should be inspected for wear, and the connections in the engine room leading to the valves, and the valves should be visually inspected.
j. **Emergency Lighting** – As applicable, emergency lighting should be inspected monthly.

Reporting

All safety inventories and inspections shall be triggered and documented on the vessel's **Computerized Maintenance Management Software (CMMS)**.

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8.2 Vessel Security

Purpose

The purpose of this procedure is to establish a security procedure for Marine Operations.

References

1. Security Guidelines for Vessels NVIC 10-02
2. Maritime Security: Vessels 33 CFR, Part 104

Definitions

MARSEC Levels - MARSEC (MARitime SECurity) is the three-tiered United States Coast Guard Maritime Security system (alert state) designed to easily communicate to the Coast Guard and the maritime industry pre-planned scalable responses for credible threats. Its objective is to provide an assessment of possible terrorist activity within the maritime sectors of transportation, including threats to nautical facilities and vessels falling within the jurisdiction of the United States that could be targets of attack.

Responsibilities

It will be the responsibility of the Director of Marine Operations to ensure that the appropriate security equipment is on board and that personnel and crew have the appropriate credentials, training, and security clearances / background checks required to perform security duties on board the vessel. It shall also be the responsibility of the Director of Marine Operations to monitor the Marine Security Levels (MARSEC) and notify the vessel in case of a change in the security level.

The Director of Marine Operations is responsible for providing a safe and secure berthing for the vessel while the vessel is away from the home port.

It shall be the responsibility of the Master of each vessel in the VIMS fleet to develop a Security Plan for their particular vessel. This plan will be vetted by the Designated Person Ashore and will be maintained on board.

It will be the responsibility of the Master, or the Vessel Security Officer (VSO) as appointed by the Master and holding the appropriate training certificate and endorsement (as per 33 CFR 104.215), to conduct vessel security drills and training. Drills and training should be conducted annually, or at as the Master deems necessary.

Further, it is the responsibility of the entire crew to be vigilant to threats, including but not limited to; suspicious persons or activities, suspicious bags or packages, suspicious vessels, and overall breakdowns in the vessel's means of preventing intrusion or attack.

Access Control

At the Master's discretion, security measures can be taken as applicable/needed:

1. **CCTV (*R/V Virginia*)**- A CCTV circuit can be set up monitoring most spaces on the vessel. The system has a 24-hour surveillance system.

2. **Lighting** – Proper lighting can prevent unwanted intruders from boarding the vessel. The vessel is designed with lights that can illuminate the entire deck space and adjacent docking. The vessel should be kept illuminated while at public docks, non-secure facilities, or when the Master is in doubt as to the security of the vessel or facility the vessel is docked at.

3. **Entry Points and Locks**- All entry points of the vessel that are capable of being secured and locked to prevent an intrusion from taking place should be locked while at the dock and the vessel is unoccupied.

4. **Vessel Signage: Appropriate** Signage can be placed at entry points as deemed necessary by the Master.

MARSEC Level Procedures

Marine Security is often a situational condition based on time and location. The Master may respond appropriately as he/she sees fit. A security situation at a secure facility may require greater vigilance than at an unsecure dock. As such the Master may consider the below recommendations:

2. MARSEC 1: Minimum appropriate security measures shall be maintained at all times.

    a. Underway
        i. Normal watches stood.
        ii. No requirement on establishing security boundaries (locking doors or hatches).
        iii. Hourly rounds and engine room checks conducted as per usual routine.
    b. In Port
        i. No additional personnel required for manning.
        ii. Doors and hatches should be locked after hours when personnel depart the vessel for the day.
        iii. No gangway restrictions.
        iv. Random search of suspicious personnel, vendors, and or packages / stores coming on the vessel as seen fit by Master.

3. MARSEC 2: Appropriate additional protective security measures shall be maintained for a period of time as a result of heightened risk of a transportation security incident.

    a. Underway
        i. Hourly rounds for engine room checks should include security checks of all spaces and entry points.
        ii. When not conducting engine room rounds the lookout should keep a watch for suspicious vessels or activity in the operating area.

iii. Security boundaries should be established for the Wheelhouse and Engine Room including locking interior doors and closing window shades.
iv. Electronic monitoring of spaces should be activated. CCTV of all spaces should be monitored and recorded.

b. In Port
i. Vessel should be crewed by at least one crew member.
ii. A chain should be secured across the gangway.
iii. Signage should be in place.
iv. All entry points should be locked, and window shades lowered.
v. Deck lighting should illuminate the vessel and dock.
vi. CCTV system activated and set to record.
vii. Communications and an update schedule with the Designated Person Ashore should be established.
viii. 25% of personnel, vendors, and packages / stores boarding the vessel should be searched by the VSO.

4. MARSEC 3: Further specific protective security measures shall be maintained for a limited period of time when a transportation security incident is probable, imminent, or has occurred, although it may not be possible to identify the specific target.

a. Underway
i. All Scientific Activity shall cease, and vessel should seek out a secure port facility or docking situation.
ii. Hourly rounds for engine room checks should include security checks of all spaces and entry points.
iii. When not conducting engine room rounds the lookout should keep a watch for suspicious vessels or activity in the operating area.
iv. Security boundaries should be established for the Wheelhouse and Engine Room including locking interior doors and closing window shades.
v. Electronic monitoring of spaces should be activated. CCTV of all spaces should be monitored and recorded.

b. In Port
i. Vessels should be crewed by at least an operator and engine room watch.
ii. A 24-hour watch should be set.
iii. Hourly rounds for engine room checks should include security checks of all spaces and entry points.
iv. The gangway should be raised and secured on deck.
v. Shore power should be disconnected, and the vessel should run on generator power.
vi. All navigational and engineering systems should be in a ready to sail status.
vii. All entry points should be locked, security boundaries established, and window shades lowered.
viii. Deck lighting should illuminate the vessel and dock.
ix. Communications and an update schedule with the Designated Person Ashore should be established.

x. No vendors shall be permitted unless critical to vessel operations, in which case vendors will be searched by VSO.

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8.2.1. Cyber Security

Purpose

The purpose of this procedure is to establish a Cyber Security procedure for Marine Operations.

Responsibilities

It will be the responsibility of the Director of Marine Operations, working in concert with VIMS ITNS, will ensure that the appropriate cyber security equipment is on board, current, updated regularly, and that personnel and crew have the appropriate training required to maintain the security of the information and technology on board the vessel.

It shall be the Master's responsibility to ensure that all persons, both crew and non-crew members, have been trained on the vessel's cyber security policy and comply with these procedures.

Further, it is the responsibility of the entire crew to be vigilant to threats and overall breakdowns in the vessel's means of preventing a cyber-attack.

General

Cyber Security is an ever-increasing threat in the maritime industry and presents an even more complicated threat to the research fleet due to the nature of the vessels' work. Scientists chartering VIMS vessels will almost always bring on board their own computers with their own software and will usually need to connect their software to the ship's internet network, navigational and scientific instruments, as well as the navigational computer itself.

A cyber-attack may present itself in many forms, including but not limited to, data collection / theft, data theft for ransom, taking control of the vessel through the navigational systems, a disruption to the system solely for the purpose of malice, or for purposes not known.

The *R/V Virginia* in particular is equipped with a wireless modem servicing two secure networks that are firewall and bandwidth protected.

1. Virginia Secure
2. Virginia Guest

Most of the navigational systems are capable of connecting to the wireless network in order to conduct updates to the software or data.

The DP system has an isolated modem for updates and maintenance that remains off and disconnected until needed for updates to software or maintenance of the system.

Procedures

1. For Crew:
    a. The vessel should maintain anti-virus protective software. Software should be maintained, upgrades should be regular, and system checks conducted systematically.
    b. Turn off all PC's when not in use.
    c. If equipped, turn off DP (Dynamic Positioning System) when not in use.
        i. Ensure DP is not connected wirelessly unless absolutely necessary for maintenance of service from a licensed service contractor.
    d. Turn off all Navigational Computers and equipment when not in use.
        i. Disconnect all navigational computers from the wireless system when not actively updating systems or downloading data (i.e.: weather, chart updates).
    e. Refrain from downloading any foreign attachments onto the network.
    f. Monitor for phishing. Do not open any suspicious looking links on any emails. Do not open emails from unknown senders with suspicious accounts, or suspicious subject lines.
    g. Do not use navigational computers for any internet searches, to check email, or any other use not directly related to navigation.
    h. Do not allow any Scientific Crew to attach a thumb drive to any of the ship's systems without first acquiring permission from the Master. When a request to use a thumb drive on a ship's computer is made, then the Master will ensure that a virus check is made on that device prior to allowing the device to be connected to the ship's computer.
2. For Scientists:
    a. Only log into a secure network that is firewall and bandwidth regulated.
    b. Turn off and disconnect PC's and other scientific equipment that has wireless capabilities when not in use.
    c. Refrain from downloading any foreign attachments onto the network.
    d. Monitor for phishing. Do not open any suspicious looking links on any emails. Do not open emails from unknown senders with suspicious accounts, or suspicious subject lines.
    e. Any computer or thumb drive that is brought on the vessel and that is connected into the vessel's network using the Ethernet, USB, or by any means that may compromise the system, is subject verification that the device is not corrupted and capable of compromising the system.

Responding to a Cyber Attack

Should a suspicion that a Cyber Attack is occurring the following steps should be taken:

1. If on DP, disable DP and switch to manual controls.

2. Disable Auto Pilot and steer in manual mode.
3. Unplug all network access points.
4. Should the Navigational Computer or Multi-Functional Displays begin to act erratically, slowly, or present suspicious information then disable and disconnect.
5. The Master should make every arrangement to moor the vessel. Or in a worst-case scenario take all manual control, anchor the vessel, and secure all electronics until professional IT services can be arranged.

Once the vessel is in a secure environment either at anchor or docked the following steps should be taken:

1. Turn off all propulsion systems.
2. Re-establish the network and identify all MAC addresses / IP connections on the network.
3. Disconnect any unknown connections.
4. Change the passwords on all networks.
5. Monitor repeatedly for system security.

Reporting

An annual review of the vessel's Cyber Security plan and audit of the vessel's network security will be conducted by VIMS ITNS and logged on to the **Computerized Maintenance Management Software (CMMS)**.

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8.3 Man Overboard (MOB)

Purpose

The purpose of this procedure is to define the best practice for responding to a Man Overboard Situation.

References

1. IMO Guide to Recovery Techniques

Responsibilities

It is the responsibility of the Director of Marine Operations to ensure that the vessel is equipped with appropriate lifesaving gear for retrieving a man in the water. It is also the responsibility of the Director of Marine Operations to ensure that the vessel is crewed with adequately trained and qualified persons to respond to all emergency situations, particularly a man overboard.

The Master shall develop a procedure to be maintained on the bridge for conducting a MOB rescue and recovery and shall be responsible for training and drills on that procedure to prepare all hands for emergency recovery actions in the event of a man overboard. The Master should assign Station Bill duties to the crew, as appropriate. He / she should ensure new crew members be given training as soon as possible upon joining the crew, as per the **Crewmember Orientation** and **Training** subsections of this manual.

The Master should inspect lifesaving equipment such as life rings, strobe lights, throw lines, etc. in accordance with the **Life Saving and Survival Equipment** and **Emergency Preparedness** sections of this manual.

The responsibilities of Crewmembers and Non-Crewmembers during a Man Overboard situation can be found on the vessels Station Bill

Procedure

In the event of a Man Overboard (MOB) situation, either if an individual witnesses a person falls overboard or it is determined that an individual is missing and may have fallen overboard, then the general alarm will be sounded, and all persons shall report to their muster station as per the vessel's Station Bill.

As every MOB is situational it will be at the Master's discretion to determine the best means of rescue and recovery for a person in the water. At a minimum the following procedures will be followed by the Master:

1. Should a person fall overboard and recover without harm to their person or any other person then the event should be logged in the Deck Log and the DPA shall be notified.
2. In the event of physical harm that cannot be treated by first aid, either to the victim or to a person aiding in recovery, then the event should be logged in the Deck Log, the DPA notified, and the procedures for **Marine Casualty / Incident Reporting** shall be followed.

3. In the event that a MOB is the result of a missing person then the event should be logged in the Deck Log, the USCG and DPA shall be notified.

Reporting

All MOB events for rescue and recovery shall be entered into the Deck Log. A MOB incident shall be reported on the **SMF 9.3: Incident Report**. In the event that first aid has to be administered to the victim, or that the victim requires advanced medical care, then the forms and procedures stated in **Marine Casualty / Incident Reporting** shall be referenced and followed.

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8.4 Abandon Ship

Purpose

The purpose of this procedure is to define the procedures for abandoning ship.

Responsibilities

It is the responsibility of the Director of Marine Operations to ensure that the vessel is equipped with appropriate survival equipment in the event that the vessel has to be abandoned. It is also the responsibility of the Director of Marine Operations to ensure that the vessel is crewed with adequately trained and qualified people to respond to and direct scientific personnel to abandon the vessel properly and safely.

The Master of each vessel shall develop a procedure specific to his/her vessel for Abandoning Ship. The Master is responsible and accountable for the training and drills to prepare all hands for the possibility of the event of abandoning the vessel. The Master should inspect life rafts, flares, life jackets, survival suits, EPIRB, and any other emergency gear that may become necessary in the event that the vessel must be abandoned. These inspections and maintenance shall be in accordance with the **Life Saving and Survival Equipment** and **Emergency Preparedness** sections of this manual. The Master should assign Station Bill duties to the crew, as appropriate. He / she should ensure new crew members be given training as soon as possible upon joining the crew, per the **Crewmember Orientation** and **Training** subsections addressed elsewhere in this manual.

The responsibilities of Crewmembers and Non-Crewmembers during an abandoned ship situation can be found on the vessels Station Bill.

Procedures

In the event that the Master of the vessel feels that it is necessary to Abandon Ship due to flooding, fire, or any other circumstance which would make the vessel unsafe to occupy, the Master will sound the general alarm as defined on the vessel's Station Bill, and will continue to ring until all persons are accounted for at the Muster Station,

The responsibility of each crewmember is listed on the station bill in accordance with that person's licensing and qualifications.

As applicable, a SOLAS Life Saving Appliance (LSA) Manual shall be maintained on board VIMS vessels. The procedures for launching the life rafts, activating the EPIRB and SART, donning of survival suits, and procedures for the use of other survival gear necessary in the event of an abandon ship scenario are maintained within that document.

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8.5 Collisions / Allisions / Groundings

Purpose

The purpose of this procedure is to define the best practice of responding to a collision, allision, or grounding situation.

References

1. 46 CFR 4.05-1
2. Marine Casualty Reporting Instruction NVIC 01-15

Responsibilities

It is the responsibility of the Director of Marine Operations to ensure that the vessel is equipped with appropriate damage control equipment in the event that the vessel's hull integrity is compromised. It is also the responsibility of the Director of Marine Operations to ensure that the vessel is crewed with adequately trained and qualified people to respond to an emergency situation involving a collision / allision / or grounding.

The Master of each vessel shall develop a procedure specific to his/her vessel for responding to a collision/allision/or grounding. The Master is responsible and accountable for the training and drills to prepare all hands for the possibility of the event of a collision / allision / or grounding situation. The Master should inspect the vessel's damage control kit, as well as any other equipment used in the event of compromised hull integrity. This may include oil spill response kit, medical trauma kit, dewatering pumps, firefighting equipment, etc. These inspections and maintenance shall be logged in the vessel's Computerized Maintenance Management Software (CMMS). The Master should assign Station Bill duties to the crew, as appropriate. He / she should ensure new crew members be given training as soon as possible upon joining the crew, per the **Crewmember Orientation** and **Training** subsections addressed elsewhere in this manual.

The responsibilities of Crewmembers and Non-Crewmembers during a collision / allision / or grounding situation can be found on the vessels Station Bill.

General

As per section **SMM 9.4: Marine Casualty / Incident Reporting** any collision, allision, or grounding is reportable to the DPA. The reporting procedures to the DPA are found in the Emergency Response Plan.

In the event of the incident occurring on the *R/V Virginia*, and in accordance with the NTVRP, the DPA will report the incident to the QI of the contracted third party and follow the corresponding flow chart of the NTVRP for important contacts for reporting procedures.

Should the incident be of a non-reportable nature, such as a "bump and go", in which no known damage has been done to the vessel or other structure, then the master should communicate the event to the Designated Person Ashore.

Procedures

Should the collision, allision, or grounding be determined by the master or mate on watch to be of the nature that could have in any way caused damage to the vessel, or to another vessel or structure, then it may be determined that it is necessary to sound the General Alarm. Should this be the case then the General Alarm should be sounded immediately.

The responsibilities of the crew, in the event of collision, allision, or grounding can be found on the vessel's Station Bill. Scientific Personnel will not hold any responsibilities on the Station Bill and shall muster at the muster station.

As soon as practicable the Master shall notify the Designated Person Ashore, and if applicable the QI on the **Non-Tank Vessel Response Plan**. The Master in coordination with the DPA shall report the incident in accordance with **Marine Casualty / Incident Reporting** section of this manual. For more information on the requirements for what constitutes a reportable incident to the U.S. Coast Guard refer to Marine Casualty Reporting Instruction NVIC 01-15.

Should the incident result in flooding, fire, loss of power or steering, then the Master and Crew shall reference the corresponding sections in this manual.

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8.6 Flooding

Purpose

The purpose of this procedure is to define the best practices for responding to flooding.

Responsibilities

It is the responsibility of the Director of Marine Operations to maintain contract with a Salvage and Marine Fire Fighting response company (SMFF) as well as an Oil Spill Response Organization, to serve as a point of contact and responder in the event of an uncontrollable flooding situation.

It is the responsibility of the Director of Marine Operations to ensure that the vessel is equipped with appropriate damage control equipment in the event that the vessel's hull integrity is compromised. The Director of Marine Operations shall ensure adequate yard and dry dock periods are scheduled to inspect the watertight integrity of the hull and engineering systems. It is also the responsibility of the Director of Marine Operations to ensure that the vessel is crewed with adequately trained and qualified people to respond to an emergency situation that results in flooding.

The Master of each vessel shall develop a procedure specific to his/her vessel for responding to a flooding situation. The Master is responsible and accountable for the training and drills to prepare all hands for the possibility of the event of a flooding situation. The Master should inspect the vessel's damage control kit, as well as any other equipment used in the event of flooding, such as dewatering pumps. These inspections and maintenance shall be logged in the vessel's **Computerized Maintenance Management Software (CMMS)**. The Master should assign Station Bill duties to the crew, as appropriate. He / she should ensure new crew members be given training as soon as possible upon joining the crew, per the **Crewmember Orientation** and **Training** subsections addressed elsewhere in this manual.

The responsibilities of Crewmembers and Non-Crewmembers during a flooding situation can be found on the vessels Station Bill.

General

As per section **SMM 9.4: Marine Casualty / Incident Reporting** any flooding is reportable to the DPA. The reporting procedures to the DPA are found in the Emergency Response Plan.

Procedures

Should the flooding be determined by the master or mate on watch to be of the nature of an emergency, threatening the stability of the vessel, not easily contained, or maintained through the use of shipboard pumps, then it may be determined that it is necessary to sound the General Alarm. Should this be the case then the General Alarm should be sounded immediately.

The responsibilities of the crew can be found on the vessel's Station Bill. Scientific Personnel will not hold any responsibilities on the Station Bill and shall muster at the muster station.

As soon as practicable the Master shall notify the Designated Person Ashore, and if applicable the QI on the **Non-Tank Vessel Response Plan**. The Master, coordinating with the DPA, shall report the incident

in accordance with Marine Casualty/ Incident Reporting section of this manual. For more information on the requirements for what constitutes a reportable incident to the U.S. Coast Guard refer to Marine Casualty Reporting Instruction NVIC 01-15.

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8.7 Fire Fighting

Purpose

The purpose of this procedure is to define the best practices for fighting a fire onboard VIMS vessel.

Responsibilities

It is the responsibility of the Director of Marine Operations to maintain contract with a Salvage and Marine Fire Fighting response company (SMFF) as well as an Oil Spill Response Organization, to serve as a point of contact and responder in the event of a situation in which a fire renders the vessel unsafe to operate, or even forcing an abandon ship situation.

It is the Director of Marine Operations' responsibility to ensure the vessel is equipped with appropriate firefighting equipment. It is also the Director of Marine Operations' responsibility to ensure that the vessel is crewed with trained and qualified people to respond to an emergency involving a firefighting situation.

The Master of each vessel shall develop a procedure specific to his/her vessel for responding to a fire. The Master is responsible for the training and drills to prepare all hands for a fire. The Master should inspect the vessel's firefighting equipment, as well as emergency equipment that may be related to a firefighting emergency, such as first aid kits and dewatering pumps, etc. These inspections and maintenance shall be logged in the vessel's **Computerized Maintenance Management Software (CMMS)**. The Master should assign Station Bill duties to the crew, as appropriate. He / she should ensure new crew members be given training as soon as possible upon joining the crew, per the **Crewmember Orientation** and **Training** subsections addressed elsewhere in this manual.

The responsibilities of Crewmembers and Non-Crewmembers during a firefighting situation can be found on the vessels Station Bill.

General

As per section **SMM 9.4: Marine Casualty / Incident Reporting** any flooding is reportable to the DPA. The reporting procedures to the DPA are found in the Emergency Response Plan.

Procedures

Should a fire be determined to exist, the Officer on Watch and Master shall be immediately notified, and the General Alarm sounded.

The responsibilities of the crew in the event of Fire/Flooding can be found on the vessel's Station Bill. Scientific Personnel will not hold any responsibilities on the Station Bill and shall muster at the muster station. The Crew will follow the direction of the Master/Engineer to:

1. Establish fire boundaries
2. Secure ventilation, power, and fuel to the fire as necessary
3. Extinguish the fire and dewater as applicable.

Procedures for the use of the use of portable and fixed firefighting systems, as well as instruction on the procedures for fighting the various class of fires in the individual spaces on the vessel shall be maintained on board and trained on annually as per the **Training** section of this manual.

As soon as practicable the Master shall notify the Designated Person Ashore, and if applicable the QI and Salvor and Marine Fire Fighter (SMFF) as per the **Non-Tank Vessel Response Plan**. The Master, coordinating with the DPA, shall report the incident in accordance with Marine Casualty/ Incident Reporting section of this manual.

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8.8 First Aid / CPR (Medical Incident)

Purpose

The purpose of this procedure is to establish a best practice for responding to a medical emergency.

Responsibilities

It is the Director of Marine Operations' responsibility to ensure that the vessel is equipped with appropriate first aid and trauma response equipment. It is also the responsibility of the Director of Marine Operations to ensure that the vessel is crewed with adequately trained and qualified persons to respond to a medical emergency. The Director of Marine Operations will provide a system for reporting injuries, and corrective action if necessary.

The Master is responsible for the training and drills to prepare all hands for a medical emergency. The Master should inspect and inventory the vessel's first aid equipment. These inspections and inventories shall be logged in the vessel's **Computerized Maintenance Management Software (CMMS)**.

The Master may designate a qualified shipboard Medical Officer, who will be the person in charge in the event of a medical casualty. This person may be delegated with maintaining the vessel's First Aid Box and Trauma Kit, as well as conducting training, but ultimately the responsibility still remains the Master's to maintain medical readiness on board the vessel.

The Master is also responsible for ensuring that accurate and updated records of the patient are kept. This may be delegated to the shipboard Medical Officer if applicable. These records are extremely important when communicating to medical authorities. The Master is responsible for coordinating any medical evacuation from the vessel.

Procedures

Medical emergencies can occur at any time, in any place, and be of any degree of urgency. It is important that the crew be prepared to meet the challenges of treating one or multiple persons aboard the vessel in case of an injury.

All persons sailing aboard VIMS vessels shall be trained and certified in Basic First Aid and CPR. These certifications shall be maintained at two-year intervals and be from USCG approved courses. Medical drills shall be conducted routinely as set forth by the Drills procedures in this manual and recorded on the Computerized Maintenance Management Software (CMMS).trauma bag for easy access in case of emergency.

Should an injury occur that requires a medical evacuation then the Master will determine which means are the safest and quickest for transporting the person to the care of advanced medical providers and will coordinate with the DPA and with shoreside responders to safely transfer the patient. This may mean that the individual is transferred to medical care providers at the closest dock, onto another rescue vessel, or by means of a USCG air lift. Whichever the case, the Master will coordinate with the responders, communicating the operational restrictions given to the patient, vessel, and environmental conditions, and will coordinate and cooperate with the responders to the best of his / her ability.

Reporting

The Designated Person Ashore should be promptly notified by the Master of all injuries, and what measures are / were taken to treat the injury. The injury and treatment should be logged in the deck log by the Master / or on duty Mate in red ink. Form **SMF 9.3: Incident Report,** as well as any other reports required either by the Institute or USCG, should be filed following the **Marine Casualty / Incident Reporting** procedures.

NOTE: INJURIES BEYOND MINOR WITH QUICKLY APPLIED FIRST AID TO TREATABLE INJURIES, AS SUGGESTED ABOVE, REQUIRE THE VICTIM TO RECEIVE PROMPT MEDICAL EVALUATION AT A MEDICAL TREATMENT CENTER. THE INJURED INDIVIDUAL DOES NOT HAVE THE OPTION TO CONTINUE TO WORK ONBOARD UNTIL THEY ARE EVALUATED BY THE COMPETENT MEDICAL AUTHORITY. THIS IS TO PREVENT WORSENING OF THE INJURY BY CONTINUED WORK. THE MASTER IS EXPECTED TO USE PRUDENT JUDGMENT, BUT IF IN DOUBT, SEND THE VICTIM FOR MEDICAL EVALUATION AND/OR CONSULT WITH THE DESIGNATED PERSON ASHORE AND OR SAFETY OFFICER IMMEDIATELY.

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8.8.1 Cardiopulmonary Resuscitation (CPR)

1. All Crewmembers aboard the VIMS vessels shall be CPR qualified per USCG licensing requirements.

2. CPR may be required for serious injuries and/or illness. CPR involves a combination of mouth-to-mouth rescue breathing and chest compression by first responder individuals. CPR keeps oxygenated blood flowing to the brain and other vital organs until appropriate medical treatment can restore normal heart and breathing rhythms. Basic training is necessary to provide CPR adequately.

3. Mariner's qualifications for CPR are kept with the Mariner's MMD / MMC and the expiration date is tracked on the **Computerized Maintenance Management Software (CMMS)**.

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8.9 Loss of Steering

Purpose

The purpose of this procedure is to establish a response in the event of a loss of steering.

Responsibilities

It is the responsibility of the Master that all personnel respond to Loss of Steering emergencies in a timely manner, and to have adequate instructions available to handle those emergencies. Further the Master/Chief Engineer, as applicable, is responsible for the maintenance and serviceability of the steering system.

The Master of each vessel shall develop a procedure specific to his/her vessel for responding to a loss of steering. The Master is responsible and accountable for the training and drills to prepare all hands for the possibility of the event of a loss of steering. The Master should ensure new crewmembers be given training as soon as possible upon joining the crew on those procedures, per the **Crewmember Orientation** and **Training** subsections addressed elsewhere in this manual.

General

Prior to getting underway an inspection of the steering system should be conducted in accordance with the 33 CFR 164.25, and documented on form **SMF 7.5.1: Pre-Sail Checklist** in the pre-sail checklists located on the **Computerized Maintenance Management Software (CMMS)**.

Procedures

Should there be a loss of steering that cannot be corrected through changing steering pumps, if applicable, then the master or mate on watch may deem that the situation is an emergency depending on the navigational status (operating in a restricted channel or heavy seas, etc.) of the vessel. Should this be the case then the General Alarm should be sounded immediately.

In the event that the vessel cannot be maneuvered the Master should use his/her discretion to best bring the vessel to a safe all stop either by means of having to, dropping anchor (following the anchoring procedures in this manual), or other means as determined by his/her best judgement so that the appropriate means can be taken to correct the steering failure.

Should the steering failure be as such that it cannot be fixed then the Master should work with the Designated Person Ashore to seek assistance/tow for the vessel as needed.

As soon as possible, the Master, coordinating with the DPA, shall report the incident in accordance with Marine Casualty/ Incident Reporting section of this manual and develop a corrective action plan.

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8.10 Loss of Power

Purpose

The purpose of this procedure is to establish a response in the event of a loss of power.

Responsibilities

It is the responsibility of the Master/Chief Engineer, as applicable, to ensure that all personnel respond to Loss of Power emergencies in a timely manner, and to have adequate instructions available to handle those emergencies.

The Master of each vessel shall develop a procedure specific to his/her vessel for responding to a loss of power. The Master is responsible and accountable for the training and drills to prepare all hands for the possibility of the event of a loss of power. The Master should ensure new crewmembers be given training as soon as possible upon joining the crew on those procedures, per the **Crewmember Orientation** and **Training** subsections addressed elsewhere in this manual.

General

A loss of power may constitute either a loss of propulsion due to a loss of one or both main engines, a loss of propulsion due to the loss of the main hydraulic gear, or the loss of ship's AC power supply due to a failure in the vessel's power generating system.

Procedures

In the event of a loss of power then the Master shall notify the Engineer immediately, if applicable. If the Mate is standing as the Officer of the Watch, they shall notify the Master and Engineer of the loss, as applicable.

In the event of a loss of power the Officer of the Watch should take into consideration any navigational hazards such as shoal water, narrow channels, shipping traffic, wind, currents, etc. and attempt while operating without power to use the remaining momentum and elements to navigate to a place where the casualty can be safely evaluated. The Master may deem it necessary to anchor the vessel following the 7.7 Anchoring Procedures in this manual.

Should the vessel remain underway, and power cannot be immediately restored to the vessel, then a security call should be made to alert other vessels of the loss of power. The AIS, day and night signals should reflect that the vessel's navigational status, in accordance with Rule 3, is Not Under Command, and shall show the lights and whistle signals to comply with Rule 27 & Rule 35 (c) of the COLREGS Navigation Rules of the Road.

Should the loss of power place the vessel in a situation of distress then the master should broadcast a distress signal via the vessel's VHF radio, making a distress call to the USCG and notifying the Designated Person Ashore of the nature of the situation. The Master may determine that the nature of distress is serious enough to muster the scientific party at their abandoned ship station with their survival suits and life jackets as per the Station Bill.

As soon as practicable after the situation is addressed, the Master should notify the Designated Person Ashore. Should it be decided that the vessel requires a port and is incapable of navigating on her own power then the Designated Person Ashore will negotiate a tow and the crew will prepare the vessel as per the **Towing Procedures** in this manual.

As soon as practicable, a report should be submitted as per **Section 9.4: Marine Casualty / Incident Reporting** in this manual.

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8.11 Line in the Rudder or Wheel

Purpose

The purpose of this procedure is to establish a response in the event of a line being caught in the rudder or wheel.

Responsibilities

It is the responsibility of the Master to conduct a **Risk Assessment / Job Safety Analysis (JSA)** of the scientific operations to attempt to minimize the risk of having a line caught in the wheel or rudder.

Further, it is the Master's responsibility to train any operators on how to avoid having a line caught in the wheel or rudder, or how to respond should it occur.

General

Due to the nature of a Research Vessel's work, there is often equipment that is operated off of the stern of the vessel, whether it is by means of towing, or through the use of the A-Frame crane. Every vessel is different in design and construction. For some vessels, the rudder is close to the stern bulkhead of the hull and can, if not careful, have lines caught around the shaft or other protrusions (zincs) in the rudder.

Regardless of the vessel characteristics, the vessel operator should be cognizant of the risks and operate with caution when over boarding equipment, as a line caught in a wheel can come tight and present great risk to the person handling the line.

Procedures

If the Mate is standing as the Officer of the Watch, they shall notify the Master of the loss, as applicable.

In the event of a line becoming caught in the rudder or wheel, then the Officer of the Watch should take into consideration any navigational hazards such as shoal water, narrow channels, shipping traffic, wind, currents, etc. and attempt to navigate to a place where the casualty can be safely evaluated. The Master may deem it necessary to anchor the vessel following the anchoring procedures in this manual.

Once the vessel is in a safe location, then the Master will assess the best means to clear the line away from the rudder or wheel. If the line or gear cannot be freed by the crew, then it may be necessary to have a certified diver dive on the rudder/wheel to free the line. Should the vessel be able to navigate on her own power to port, then the operator should ensure that the line has been secured in a way that it will not become further fouled in the propeller before engaging the engine and transiting towards the dock.

Should it be decided that the vessel requires a port and is incapable of navigating on her own power then the Designated Person Ashore will either negotiate a tow, in which case the crew will prepare the vessel as per the **Towing Procedures** in this manual, or negotiate for a diver to be brought out to the vessel by other means.

Should a diver be required then machinery must be secured, the main engines, steering, and suction pumps shall be tagged out to avoid potential harm to a diver. Further the Alpha flag should be flown indicating that a diver is below in the water.

As soon as practicable the Designated Person Ashore shall be notified of the incident and a report should be submitted as per **Section 9.4: Marine Casualty / Incident Reporting** in this manual.

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8.12 Non-Tank Vessel Response Plan

Purpose

The purpose of the Non-Tank Vessel Response Plan (NTVRP) is to provide guidance to the Master and officers of the *R/V Virginia* specifically with respect to actions necessary when there is either an oil pollution incident, or a significant threat of such an incident. The NTVRP also provides a general description of shoreside activities under those same conditions.

References

1. Virginia Institute of Marine Science / U.S. OPA-90 Non-Tank Vessel Response Plan (NTVRP)

Responsibilities

As per the vessel's Non-Tank Vessel Response Plan (NTVRP) it is the responsibility of the Director of Marine Operations to maintain contract with a Third-Party Qualified Individual (QI), Salvage and Marine Fire Fighting response company (SMFF), as well as an Oil Spill Response Organization (OSRO). The Director of Marine Operations will serve as a point of contact to the QI and shall be the company representative in the event of an incident, emergency, spill, or threat of a spill.

It shall also be the Director of Marine Operations' responsibility to ensure that all appropriate equipment for pollution and spill prevention and a spill response is provided to the vessel. The Director of Marine Operations shall be responsible for maintaining current the vessel's general arrangement, fire plan, and tank plan, and Load Line Certificate, notifying the above contracted company / organizations of any change.

It shall be the Master of the *R/V Virginia's* responsibility to conduct training and drills, defined as Onboard Emergency Procedures (OEP) Exercises, in intervals determined by the NTVRP plan provider. These exercises shall be conducted to adequately familiarize and prepare the crew with spill mitigation procedures and, in an emergency, onboard emergency response procedures as defined in the plan. These drills shall be conducted quarterly with at least one being unannounced and covering topics defined in the plan.

It shall further be the Master's responsibility to maintain the vessel's pollution prevention and response equipment in serviceable condition and to notify the Director of Marine Operations of any discrepancies. The Master shall retain on board a current copy of the vessel's General Arrangement Plan, Tank Plan, Fire Plan, and Load Line Certificate.

General

The NTVRP will be activated in the event of an "Incident/Emergency". The Plan defines an "Incident / Emergency" as to include but not be limited to:

1. An oil spill of any type entering or potentially entering the water.
2. Grounding;
3. Touching bottom;
4. Collision/Allision;

5. Shipboard fire/explosion;
6. Hull failure;
7. Excessive list;
8. Equipment failure (main propulsion, steering gear, etc.);
9. All other situation where outside assistance is necessary

Should an incident / emergency occur then the Master should refer to the NTVRP notification tree and contacts to begin the activation of the plan. All pertinent contacts and forms are located within the plan, and the Master should familiarize him / herself with the procedures so as to be prepared in the event of an actual emergency.

The NTVRP outlines the responsibilities of the persons involved in a response to an incident / emergency to include a Bridge Party, Shipboard Response Team (SRT), Engine Room Party, and Standby / First Aid Party.

The procedures provided in the NTVRP are for guidance purposes and should be read in conjunction with the company's Safety Management System procedures related to Oil Spill Contingency Planning and Emergency Response. The Company's procedures take precedence in the event of a conflict with the procedures outlined in the Plan.

Further, the NTVRP defines the Shore-Based Response Activities, both for the plan preparer and the company.

Reporting

All forms and reporting procedures for training and incidents / emergencies regarding the Plan are self-contained within the NTVRP. It shall be the responsibility of the Director and Master to have a full working knowledge of these reporting procedures.

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Section 9: Non-Conformities

9.1 Corrective Actions

Purpose

The purpose of this procedure is to establish a system of correction for Observations, Non-Conformities, Near Misses and Incidents and to set forth the guidelines for their investigation and processing in order to find their root cause and provide an avenue for continued improvement. In addition, this procedure provides for tracking the results of Non-Conformities for presentation to management for review. When Non-Conformities are corrected, they are subject to re-verification to demonstrate conformance with requirements.

The objectives of the Corrective Action System are to:

1. Reduce errors and enhance safety, security, and prevent pollution.
2. Inspire more effective teamwork.
3. Promote job involvement.
4. Increase employee motivation.
5. Create a problem-solving capability.
6. Improve company communications.
7. Promote personal and leadership development.
8. Develop Safety, Security, and Environmental awareness.

Scope

This procedure is applicable to all employees of VIMS Marine Operations, both shoreside and afloat.

Responsibilities

The management of the affected departments is responsible for ensuring the understanding of this procedure and the implementation of the corrective actions required. The Director of Marine Operations as the Designated Person (DP) is responsible for ensuring that Observations, Non-Conformities, Incidents, and Near Misses identified are processed and that Corrective Action is taken.

Procedure

1. All employees and Scientific Personnel are given access to the OBSERVATION / NON-CONFORMITY REPORT – CORRECTIVE ACTION REQUEST (NCCAR) and NEAR MISS REPORT forms in the appendix of this manual.

   Any employee, or Scientific Personnel, can initiate corrective action to solve a Non-Conformity, request corrective action or remediation of a hazard, address a recurring problem, or make a suggestion about an opportunity for improvement. This is done by filling out and submitting the appropriate form as described in **Section 9.2: Observations & Non-Conformities** and **Section 9.3: Near Miss Reporting** of this manual.

   All personnel will be trained in reporting an Observation / Non-Conformity during the **Crewmember Orientation** and **Non-Crewmember Orientation**.

2. The NCCAR or NEAR MISS is then given to the Master with any accompanying information (department forms, letters, marked up Safety Management System document, etc.).

3. The Master reviews the documentation and forwards all material to the Designated Person (DP), along with his/her recommendations for corrective action if applicable, within 15 days of the initial date of the NCCAR or Near Miss.

4. The Designated Person will fill in Section 2 of the form, assigning an NCCAR, Near Miss or Incident number.

    a. This number is the six-digit number described in the Procedures Sub-Sections of Sections 9.2, 9.3, and 9.4 of this manual. The Designated Person shall log the pertinent details in the Nonconformity/Corrective Action Report (NCCAR). This includes NCCAR initiation date and other details as applicable.

5. The Report is then assigned eventual closure. Corrective Action will be determined by the Designated Person no later than 15 days from the date the NCCAR / Near Miss was received and logged. The Corrective Action to be taken is recorded on the NCCAR, Near Miss or Incident form by the Designated Person.

6. Corrective action should normally be implemented within 30 days of the DP's final determination and assignment for action. When closed, the DP will sign and date to close out NCCAR, Near Miss or Incident Report in Section 8. In cases where a longer term is necessary for final implementation of corrective action (e.g. shipyard repair or modification), the DP may set an extended date; in such cases, the open NCCAR will be reviewed and noted by the DP as part of Management Review no less than quarterly.

7. The DP will log the closed Report in the NCCAR tracking system and forward to the Master. The closed Report will be filed under the "Closed" tab in the NCCAR / Near Miss binder.

8. The process concludes with an all-hands Safety Meeting as indicated by the **Safety Meetings** section of this manual. The Master and crew will discuss the corrective action and review the appropriate SMM Section. This will include any extended action dates as discussed in (H) above. The meeting will be recorded as per the **Safety Meetings** section and maintained on the **Computerized Maintenance Management Software (CMMS)**.

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9.2 Observations & Non-Conformities

Purpose

This procedure is intended to set forth the methods for reporting, recording and analysis of Observations and Nonconformities. Using these guidelines, the possible root causes of nonconformities can be determined in order to prevent recurrence. In addition, this procedure provides for tracking the results of Observations and Non-Conformities for presentation to management for review.

Responsibilities

The primary responsibility for this procedure lies with each person aboard the VIMS vessels. The Master is responsible for ensuring the understanding of this procedure for all involved. Any crewmember, scientific personnel, or member of the shore staff can report what he / she thinks to be a Non-Conformity. The Designated Person (DP) is responsible for tracking Non-Conformities and reporting results.

Definitions

Observations – In general an Observation is the least significant condition that is entered into the system. An Observation is a finding or condition which, if left uncorrected, will likely result in a Nonconformity. An Observation could also be a condition which could result in a Near Miss under different circumstances.

Non-Conformity – A finding, discovery, incident or occurrence that has come to someone's attention that impacts the safety of the vessel, its equipment, personnel, or the environment. By its very definition, it is meant to be very broad and general, to include all nature of findings that impact safety on the vessel. This impact may even include system discrepancies and lack of recorded actions.

The categories defined above may be the result of an audit or simply the result of an individual observing his or her normal responsibilities. It is important to emphasize that the process is not to assign blame but to make for an ever-safer working environment. The usefulness of the Non-Conformity system is only as good as the information that is collected. Timely investigation is imperative for the collection of this accurate information.

Procedures

The initiator shall use the procedure and flowchart articulated in **Section 9.1: 9.1 Corrective Actions**

1. section of this manual for proper submission and reporting protocols.

2. All personnel, both regular crew and Scientific Personnel attached to the vessel will be trained on Section 9 of this manual, and the process for reporting Observations & Non-Conformities during the **Crewmember Orientation**, and **Non-Crewmember Orientation**.

3. Any employee shall, upon identification of an Observation or Non-Conformity, complete the **SMF 9.2: Observation / Non-Conformity Report – Corrective Action Request (NCCAR)**

form, found on the **Computerized Maintenance Management Software (CMMS)**. This form is also included in the Forms section of this manual.

Examples of Non-Conformities are:

a. Security Incidents.
b. Insurance Claims.
c. Failure of an element of the documented Safety Management System.
d. Customer Complaints.

Observations are "early warnings" of potential problems in daily operation or possible defects in the documented Safety Management System which could lead to non-conformities such as those listed above.

4. The initiator of a NCCAR shall ensure the fields in which they are responsible are filled out in their entirety.

5. An NCCAR number shall be assigned and recorded by the Director in Section 2.1 of the form for tracking purposes. The number shall consist of six digits. The first two digits will indicate the year such as 05, 06, etc. The next two digits will indicate the month such as 01, 02, etc. The last two will be a numerical sequence for the NCCAR's assigned that month such as 01, 02, etc.

    a. Example: If the NCCAR was the seventh one reported in June of 2020 the number would be; NCCAR-200607.

6. The section of the current Safety Management manual which most closely addresses (or in the initiator's opinion should address) observation or nonconformity shall be identified by section number and title in Section 3.1 of the NCCAR form.

7. The reported item shall be identified as an Observation or a Non-Conformity by checking the appropriate box in Section 4.3 of the NCCAR form.

8. The source of the Observation or Non-Conformity shall be identified by checking the appropriate box in Section 4.4 of the NCCAR form. If the Observation or Non-Conformity is identified from a letter, report, or other document, not a part of the Safety Management System, this shall be identified in Section 4, and a copy shall become an attachment to the NCCAR form.

9. If the source of the Observation or Non-Conformity is not supported by attached documentation, the actual description of the observation or nonconformity in Section 4.5 of the NCCAR form shall contain a sufficient amount of detail to identify the problem. If appropriate, the document and clause number affected by the nonconformance shall be furnished.

10. The Initiator shall take whatever action is deemed appropriate at the time to minimize the effect of the Observation or Non-Conformity and determine if further action is required. The determination shall be checked in the appropriate box in form Section 4.6.

11. Once the initiator has made the report, that person's department head may make a recommendation in Section 4.7.

12. The Master will then review the report and make his / her own recommendations in Section 5.

13. The DP will then review the NCCAR and in Section 6 will create a resolution, and then will assign the resolution to be completed by an individual and assign a date in which he / she expects the resolution completed by.

14. The Master will oversee the DP's resolution through its completion in Section 7.

15. The DP, in Section 8, will close out the NCCAR.

Reporting

Observation / Non-Conformity Report – Corrective Action Request (NCCAR) forms are considered Management System Records. The NCCAR forms become part of the Management Review of the system and will be recorded on the **Computerized Maintenance Management Software (CMMS)**.

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9.3 Near Miss Reporting

Purpose

This procedure is intended to set forth the methods for reporting, recording and analysis of Near Miss situations. Using these guidelines, the possible root causes of a Near Miss can be determined in order to prevent recurrence. In addition, this procedure provides for tracking the results of Near Miss's for presentation to management for review.

Responsibility

The primary responsibility for this procedure lies with each person aboard the VIMS vessels. The Master and department heads are responsible for ensuring the understanding of this procedure to all involved. Any crewmember or member of the shore staff can report what he / she thinks to be a Near Miss. The Designated Person (DP) is responsible for tracking hazardous occurrences and reporting results.

Definition

Near Miss - A Near Miss is defined as an unplanned event in which no property was damaged, and no personal injury was sustained, but where, given a slight shift in time or position, damage or injury could have occurred.

Near Miss Reporting is a vital key in the Safety Management System as it allows for policies to be reviewed to determine what improvements in policy, procedures, and best practices can be made.

The Near Miss reporting system can only be effective if the reports are anonymous, protecting the persons involved, and that there is no punitive action taken against persons that may be implicated in the report.

Procedure

1. Any employee shall, upon discovery of a Near Miss, or upon witnessing a Near Miss, shall complete the **SMF 9.2: Near Miss Report** found in the **Computerized Maintenance Management Software (CMMS)**, and also in the Forms section of this manual.

2. The initiator of a Near Miss shall ensure the form is filled out.

3. A Near Miss number shall be assigned and recorded by the Designated Person (DP) in Section 2.1 of the form for tracking purposes. The number shall consist of six digits. The first two digits will indicate the year such as 05, 06, etc. The next two digits will indicate the month such as 01, 02, etc. The last two will be a numerical sequence for the Near Miss's assigned that month such as 01, 02, etc.

    a. Example: If the Near Miss was the second reported in July of 2008, the number would be Near Miss - 080702.

4. The section of the current Safety Management Manual which most closely addresses (or in the initiator's opinion should address) the hazardous occurrence shall be identified by section number and title in Section 3 of the Near Miss form.

5. The initiator shall complete Section 4 of the Near Miss form in as much detail as possible. This should include the date and approximate time of the occurrence, the general and specific location where the occurrence took place, any witnesses to the occurrence other than the initiator, and a description of the occurrence including any relevant details.

6. The initiator shall take whatever action is deemed appropriate at the time to minimize and/or remediate the hazard and its effects. This action should be entered in Section 4.7 of the Near Miss form, along with any recommendations for further remediation of the hazard.

7. Any additional documentation (e.g. photographs, additional witness statements etc.) should be attached to the Near Miss form.

8. The Near Miss form shall then be reviewed by the Master, and the Master shall make his / her recommendations for remediation.

9. The Near Miss will then be forwarded to the DP to complete Section 6, with a Corrective Actions Resolution, assigning am individual with implementing the Corrective Action, and a date upon which the correction should be implemented.

10. The Master will oversee that the Corrective Action was taken and record such in Section 7, at which time the DP will close out the report in Section 8.

Reporting

SMF 9.3: Near Miss Report forms are considered Safety Management System Records and are found and stored on the **Computerized Maintenance Management Software (CMMS)**. The Near Miss Report forms part of the Management Review of the system.

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9.4 Marine Casualty / Incident Reporting

Procedures

This procedure is intended to set forth the methods for reporting, recording and analysis of accidents on board the VIMS vessels. Using these guidelines, the possible root causes of an accident can be determined in order to prevent recurrence. In addition, this procedure provides for tracking the results of accident reports for presentation to management for review.

References

This document is intended to provide guidance for the identification and reporting of marine casualties to promote compliance with:

1. 46 CFR, Chapter 61 & 63
2. 46 CFR Part 4
3. NAVIC, Marine Casualty Reporting Procedures Guide.

Responsibilities

The Master is responsible for reporting any accident onboard to the appropriate agencies and to the Director of Marine Operations, carrying out alcohol and drug testing in conjunction with any Serious Marine Incident, and completing all required documentation of the accident.

The DMO will assign a person responsible for investigating and documenting accidents within the SMS and reporting results to ensure that this important feedback process results in a safer operation of the vessel. The DMO is further responsible for ensuring that the Master has received adequate testing training in order to perform his duties.

As per 46 CFR Part 4, the owner, agent, master, operator, or person in charge (collectively referred to as "responsible industry parties") must determine whether an occurrence meets the criteria for notifying the Coast Guard. The NAVIC, Marine Casualty Reporting Procedures Guide, Enclosure (1) provides assistance to responsible industry parties in making such a determination. This individual shall be the Director of Marine Operations.

If the DMO determines an occurrence meets the requirements for marine casualty notification, he / she should make every effort by any means available to immediately notify the nearest Coast Guard Command Center, after addressing any resulting safety concerns, as per 46 CFR Part 4, Subparts 4.04 and 4.05. All Notifications must include, as a minimum, the information contained in 46 CFR 4.05-5.

Additionally, as per 46 CFR 4.05-10, a written marine casualty report (CG-2692 Forms) shall be submitted no later than 5 calendar days following a reportable marine casualty. If there is any doubt whether an occurrence is a reportable marine casualty, the Coast Guard strongly encourages responsible industry parties to contact the nearest OCMI (typically the nearest Coast Guard Command Center) to determine an appropriate response.

Definitions

VIMS | William & Mary Virginia Institute of Marine Science	9.4 Marine Casualty / Incident Reporting	
Marine Ops:	Originator:	Approved By:
Safety Management System	T. R. Kirkpatrick	Tim N. Turner

Reportable Incident - As Per 46 CFR 4.05 any of the following shall be considered a reportable casualty:

1. An unintended grounding, or an unintended strike of (allision with) a bridge
2. An intended grounding, or an intended strike of a bridge, that creates a hazard to navigation, the environment, or the safety of a vessel, or that meets any criterion of the following casualties
3. A loss of main propulsion, primary steering, or any associated component or control system that reduces the maneuverability of the vessel
4. An occurrence materially and adversely affecting the vessel's seaworthiness or fitness for service or route, including but not limited to:
    a. Fire
    b. Flooding
    c. Failure of or damage to:
        i. Fixed fire-extinguishing systems
        ii. Lifesaving equipment
        iii. Auxiliary power-generating equipment
        iv. Bilge-pumping systems
5. A loss of life
6. An injury that requires professional medical treatment (treatment beyond first aid) and, if the person is engaged or employed on board a vessel in commercial service, that renders the individual unfit to perform his or her routine duties; or
7. An occurrence causing property-damage in excess of $75,000, this damage including the cost of labor and material to restore the property to its condition before the occurrence, but not including the cost of salvage, cleaning, gas-freeing, drydocking, or demurrage
8. An occurrence involving significant harm to the environment as defined in 46 CFR 4.03-65.

Non-Reportable Incident – The term "Non-Reportable" in this context refers to incidents that are not required to be reported to the U.S. Coast Guard. However, this does not mean that the incident should not be internally reported either to the Marine Operations Administration, or to the VIMS / William & Mary Administration. A non-reportable incident should be reported to the DPA, who will determine the appropriate response, and if the incident should be further reported.

Non-Reportable Incidents may include, but are not limited to:

1. Medical injury treated by first aid
2. An occurrence causing property-damage less than $75,000, this damage includes the cost of labor and material to restore the property to its condition before the occurrence
3. Disobedience of Masters Orders
4. Sexual Harassment
5. Inappropriate behavior by crew / science party
6. Any instance which the Master deems necessary, or as a means of disciplinary action

Procedures

1. Vessel Reporting Procedures:

a. Prior to making a report, ensure that the crew and vessel are safe and that there are no hazards to navigation.
b. Prior to making a report gather as much information as possible, such as:
    i. Name of the vessel / vessels involved in the incident
    ii. Official number / numbers of vessels involved
    iii. Name of the owner / owners involved
    iv. The nature and circumstance of the casualty
    v. The locality in which it occurred
    vi. Nature and extent of injury to persons, and the damage to property
c. The Designated Person A (DP) shall be notified of the incident as soon as is practical.
d. An internal incident report form **SMF: 9.3 Incident Report** shall be completed on the **Computerized Maintenance Management Software (CMMS)**. This form shall be:
    i. Issued an Incident Number by the Designated Person in Section 2.1
    ii. Shall be completed by the Master, filling in all necessary fields
    iii. Attached to the Incident Report form are the appropriate Coast Guard forms and Institution forms. The Master and DP should determine the extent of the incident and which appropriate additional external forms will be required to be filled out.
    iv. The Master will write a statement detailing his / her / crew's response to the incident in Section 4.
    v. The DP will review the Incident Report in Section 5 and issue a corrective action, assign that action to an individual, with a determined correction date.
    vi. The Master will oversee the Corrective Action and will report on the actions taken in Section 6.
    vii. The DP will close out the report in Section 7.
e. For each marine casualty required to be reported the Master and / or DP shall determine whether there is any evidence of alcohol or drug use by individuals directly involved in the casualty.
    vii. An Alcohol test shall be conducted using the alcohol strip tests located on board within 2 hours of the incident and logged in the official logbook.
    viii. A drug screening test shall be conducted by an approved facility / administrator within 24 hours of the incident and logged in the logbook.
f. Should it be believed that the use of alcohol or substance was a contributing factor to the incident, that information should be included in the written report (Forms CG-2692 and CG-2692B) submitted for the casualty.
g. The Master and / or DP must include information that:
    i. Identifies those individuals for whom evidence of drug or alcohol use, or evidence of intoxication, has been obtained; and,
    ii. Specifies the method used to obtain such evidence, such as personal observation of the individual, or by chemical testing of the individual.
h. Further, an entry shall be made in the official logbook pertaining to those individuals for whom evidence of intoxication is obtained. The individual must be informed of this entry and witnessed by a second person.
i. If an individual directly involved in a casualty refuses to submit to, or cooperate in, the administration of a timely chemical test, when directed by a law enforcement officer or by the marine employer, this fact must be noted in the official log book, and in the

written report (Forms CG-2692 and CG-2692B), and shall be admissible as evidence in any administrative proceeding.

j. For further reference on the Drug and Alcohol policy of the Virginia Institute of Marine Science / Marine Operations, and for the policy regarding chemical testing, please refer to the **Drug and Alcohol Policy** of this document.

k. Following notifying the USCG of the casualty the Master, Mate, or Person in Charge will have 5 days to file the written report to the Coast Guard Sector Office or Marine Inspection Office. The written report must be provided on Form CG-2692.

2. University Reporting Procedures:

All William & Mary employees are expected to report an accident/incident within 24 hours of its occurrence. The VIMS EH&S Department will then determine if an investigation is warranted based upon the following guidelines:

a. The employee and supervisor shall complete the First Report of Accident/Injury Form and submit it to Human Resources as directed on the form. The supervisor can utilize the Accident Investigation Form to document the accident.

   i. Work-related personal-injury accidents or illnesses that involve medical treatment beyond first aid will be investigated.
   ii. b. Injuries/illnesses that involve first aid only may be investigated if the supervisor or the EH&S staff believe it would provide beneficial lessons learned.

b. Equipment damage incidents
   i. Equipment damage in which the estimated replacement, repair, or cleanup costs are $5,000 or more will be investigated.
   ii. Equipment damage in which the estimated replacement, repair, or cleanup costs are less than $5,000 may be investigated if the supervisor or the EH&S staff believe it would provide beneficial lessons learned.
   iii. To report equipment damage, contact the EH&S Department at 221-2146 or 221-2288.

c. Spills
   i. Spills of oil, chemicals, or other hazardous materials of any amount into a sink, floor drain, exterior storm sewer or site drainage ditches will be investigated.
   ii. To report a spill, contact the EH&S Department at 221-1643.

d. Vehicle Accidents
   i. All vehicle accidents involving state-owned or leased motor vehicles will be investigated.
   ii. For reporting information, go to: Vehicle Accident Reporting
   iii. Risk Management's Auto Accident information page can be found here: Risk Management

Records

SMF 9.4: Incident Report forms are considered Safety Management System Records. Incident Report forms and all attached documentation become part of the Management Review of the system. The Director of Marine Operations office will interface with the Institution on the need to submit documentation directly to the University.

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Section 10: Engineering

10.1 Maintenance Program

Purpose

The purpose of this procedure is to set forth the maintenance system for VIMS vessels.

Scope

The scope of this instruction is to provide guidance in the maintenance of the vessel and vessel's equipment. The procedure includes both preventative maintenance and repair.

General

The maintenance program has several facets that work together to keep the vessel operating efficiently and dependably. The maintenance program can be divided into reactive and preventative maintenance. Both components are documented in various ways and this procedure is designed to identify the different components and the method used to document them.

1. The reactive component of the maintenance program consists of the response to the conditions emerging on the vessel due to the failure of the equipment or various components. When something breaks, it needs to be fixed. This activity shall be documented in the Maintenance Log, as well as in the **Computerized Maintenance Management Software (CMMS)**.

2. The preventative component of the maintenance program consists of scheduled or planned maintenance and oil analysis. These activities are undertaken to prevent failures before reactive maintenance has to be performed.

3. The **Computerized Maintenance Management Software (CMMS)** is central to the planned maintenance activities. This electronic system features:

    a. The ability to maintain an inventory record.
    b. Track's vessel components characteristics and histories.
    c. It schedules routine (planned) maintenance
    d. It documents all maintenance (planned and reactive)
    e. It provides service request capabilities for outside repair assistance
    f. It maintains inventory and machinery histories.
    g. The maintenance portion of the program automatically interfaces with the inventory portion to consume spares from inventory upon completion of maintenance activities.
    h. Maintains inventory on Critical Spares.

4. Routine maintenance and inspections of equipment that occur on a weekly basis or less frequently will be reported through the **Computerized Maintenance Management Software (CMMS)**. This includes:
    a. The inspection of safety equipment and the disassembly of equipment.
    b. Routine maintenance will be scheduled and planned based on equipment manufacturers' maintenance instructions, prior maintenance history and/or operational experience.

5. Scheduled /planned maintenance will be conducted based on equipment manufacturers' maintenance instructions, prior maintenance history and / or operational experience, and pierside / drydock availability periods.

6. Lube oil analysis consists of periodical sampling of oil from system critical equipment and sending the samples to a laboratory for analysis. The frequency varies with the number of hours spent on the equipment and the service that the piece of equipment is engaged in. Lab analysis results will be maintained in their own log by the Chief Engineer, which may be appended to the Chief Engineer's Maintenance Log.

Responsibility

Ultimately the maintenance of the vessel is the responsibility of the Master. This responsibility is delegated to each department for the efficient maintenance of the vessel. Changes of maintenance responsibilities are at the discretion of the Master.

It is the responsibility of each department head to review the recommended maintenance set forth by the manufacturer of equipment or systems under his/her control. It is at the discretion of each department head to determine the level of maintenance activity that shall be deferred to subordinates. While the activity may be deferred, the responsibility remains with the department head. It is the responsibility of each department head to review the recommended maintenance set forth by the manufacturer of equipment or systems under his/her control.

Recording

Each department head is responsible for ensuring that all maintenance activities are documented in the **Computerized Maintenance Management Software (CMMS)**.

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10.2 Maintenance of Critical Systems

Purpose

The purpose of this procedure is to set forth the concept of critical systems and equipment within the Safety Management System.

Definition

Critical System or Equipment – The equipment or technical systems that the operational failure of may result in hazardous situations.

Responsibility

Ultimately the maintenance of the vessel rests with the Master of the vessel. This responsibility is delegated to each department for the efficient maintenance of the vessel. Department heads having equipment under their maintenance responsibility must monitor the maintenance of critical pieces of equipment. In addition, department heads must ensure that critical parts are reordered once they have been consumed.

General

The ISM Code calls for the identification of equipment and technical systems that are considered critical and the procedures set in place to ensure that these systems are adequately maintained, and that there be specific measures established aimed at promoting the reliability of such equipment or systems. These measures should include the regular testing of stand-by arrangements and equipment or technical systems that are not in continuous use.

It is recognized that all pieces of equipment are important to the proper operation of the vessel. The critical equipment and systems identified in this procedure are those felt to meet the ISM Code criteria.

It shall be the responsibility of each vessel Master or his/her designated Engineer to develop a Critical System Inventory specific to that vessel and shall contain the following information about each critical component listed:

1. Operational procedures to ensure redundancy.
2. Rotation of equipment (i.e., changing the lead steering pump each month).
3. Periodic tests performed on standby equipment.
4. The preventative maintenance schedule for the specific components. Preventative maintenance will be developed and planned based on manufacturers' maintenance instructions, prior maintenance history and operational experience.
5. The pieces of equipment in the lube oil analysis program and the frequency of sampling.

Within this concept of critical equipment and systems it is a requirement to identify critical spare parts. Once a piece of equipment has been designated as a critical piece of equipment, the spare parts associated with that piece of equipment become items that need to be identified. This shall be accomplished by determining the "minimum ordering quantity" for each spare part. Only those spare parts considered critical will have a minimum ordering level.

Any identified maintenance or repair requirement (other than planned preventative maintenance) to any critical system will be reported to the Port Engineer via e-mail within 24 hours of identification. The report will include the identified issue, the planned time and duration of the maintenance or repair to be conducted, and a list of parts needed to complete the repair.

At the completion of any maintenance or repair to any critical system, a list of spares consumed in the work will be provided to the Port Engineer by e-mail, no less than 7 days after the repair is completed, tested and the system is fully operational.

Recording

Maintenance activities are to be recorded in the **Computerized Maintenance Management Software (CMMS)**. Each department head must ensure that the maintenance performed by their departments is entered into this management system.

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Section 11: Documentation

11.1 Document and Data Control

Purpose

The purpose of this procedure is to define the method used to ensure holders of controlled documents have the latest revision of documents and that obsolete documents are removed from the system.

Responsibilities

It is the responsibility of the Designated Person (DP) to ensure documents are distributed, controlled, and changed in accordance with this procedure and that obsolete documents are promptly removed from the system.

It is the responsibility of the holder of a controlled document to become familiar with the appropriate additions, changes, and/or deletions to the various manuals assigned to them.

Procedure

The Safety Management Manual (SMM) contains the documentation of the safety management system for Marine Operations. It contains information on the Safety Management System and the procedures set forth therein. Most procedures considered important enough to be committed to writing should be contained in the SMM or referenced therein.

The distribution of the SMM is set forth in the Distribution Procedures portion of this manual, **SMM 11.2 Distribution of Manuals**. Changes to the SMM can be initiated either by the vessel crew or by the VIMS Marine Operations staff. Changes must be sent to the Designated Person (DP) to have them incorporated in the SMM. The DP shall approve all changes to the SMM.

Once changes have been approved for incorporation into the Safety Management Manual, the changes will be sent to the individuals responsible for maintaining copies of the manual, both printed and electronic versions. These changes shall be recorded in the Table of Contents under the revision column, with the number of the revision and the effective date. Each individual section footer will reference the revision number and effective date. A separate revision log will be maintained by the Marine Safety Officer outlining the revisions made to the document. These responsible individuals shall insert the changes into their manuals and report to the DP that the manuals have been changed.

Any portions of the SMM that have been made obsolete by changes shall be disposed of locally and do not need to be returned to the DP. The procedures maintained within this manual are current. The revision number of each procedure is indicated on the bottom of each page. To ensure validity of each procedure, the revision number can be cross-referenced with the revision number located by each procedure in the table of contents. If copies of individual procedures are made, then the word “COPY” must be clearly marked on each page of the procedure. It is the responsibility of each individual reading a procedure marked “COPY” to ensure they are reading the most current and valid revision.

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11.2 Distribution of Manuals

Purpose

The purpose of this procedure is to identify the distribution of the Safety Management Manual.

Responsibility

It is the responsibility of the Designated Person (DP) to distribute the Safety Management Manual and all updates to allow ready access to the ship's crewmembers and VIMS Marine Operations Staff.

General

The Safety Management Manual contains the documentation of the Safety Management System for Marine Operations and the vessels under that department's responsibility, and the procedures set forth therein.

The distribution of the Safety Management Manual has to maintain a balance between access and document control. The table below indicates where the original version and controlled copies of the Manual shall be located, both on board the ship and shoreside, and the person responsible for maintaining each copy. The electronic version onboard the ship will be maintained on the ships' server as read only access and will be viewable by all crew and science personnel. A request to change this distribution shall be sent to the DP.

Electronic Copy Location	Person Responsible
Marine Operations Shared Drive	Director of Marine Operations
Computerized Maintenance Management Software	Director of Marine Operations
Each Vessel's Computer Hard Drive	Vessel Master
Printed Copy Location	**Person Responsible**
Marine Ops Office	Director of Marine Operations
On each vessel as determined by the Master	Vessel Master

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Section 12: Company Verification, Review, and Evaluation

12.1 Internal Audits

General

A documented internal audit program and procedure has been designed, planned, implemented, and managed to ensure the entire organization, including shoreside support offices and the vessel covered by the Safety Management System, undergo an internal audit at least once per calendar year. The purpose of the internal audit is to ensure that the Safety Management System is effectively maintained and implemented.

Internal Audit Program

The Director of Marine Operations (DMO) is responsible for the establishment and maintenance of the Internal Audit program. The DPA has established the procedure that defines the establishment and maintenance of the company Internal Audit Program to verify controls for Ship Operations.

The DMO utilizes, at a minimum, the resources of vessel personnel, top management concerns, known Safety Management System problems, results of previous audits, and the status and importance of the activities to determine the frequency and degree to which each area is audited.

Operations that are deemed to have a greater than average impact upon safety or the environment may be audited more frequently than once each year. The documented procedure covers:

2. The scheduling of internal audits.
3. The audit criteria, frequency, scope, and methods for carrying out each audit.
4. The responsibilities of auditors and auditees and involved or affected parties.
5. The recording and reporting of audit results.
6. The performance of corrective action.
7. The follow-up activities to verify the actions taken and the reporting of the verification results.

The management personnel responsible for the area being audited ensure that actions taken in response to any detected nonconformities are taken without undue delay to eliminate their causes.

Internal Audit Procedure

3. Audit Scheduling
    a. An audit schedule shall be maintained to ensure that an internal audit of each unit (vessel or office) is conducted at least annually.
    b. This schedule shall be developed by the DMO, and will indicate the tentative date of the audit, which unit will be audited, which elements of the ISM Code will be addressed, and the appointed auditor(s).
    c. All auditors shall be independent of the area they are assigned to audit.

d. All auditors shall have a basic understanding of the ISM auditing process and have either been part of an auditing team or have gone through an ISM audit as a department head.

4. Audit Preparation
   a. Prior to the audit, the auditor(s) shall review the pertinent sections of the Safety Management Manual, Common Procedures, the Vessel Procedures (if applicable), and any previous audit reports relevant to this unit.
   b. The review shall include any observations made during previous audits, a follow-up to ascertain if any previous nonconformities are still open, and any areas of emphasis set forth by the Designated Person.
   c. It is recommended that the auditor(s) prepare a list of questions on the "INTERNAL AUDIT CHECKLIST" (Appendix SMF 12.1.1) or similar document to use as a guide to ensure coverage of the subjects to be audited. The checklist should be kept to a minimum length in keeping with the objectives and scope of the audit. The checklist may be filled in by hand or electronically. These shall become a part of the audit record for future audit guidance.
   d. The DP shall coordinate the schedule for the audit with the assigned auditor(s) and with the Master. This coordination will ensure that the audit does not conflict with operational commitments of the unit being audited.
   e. Any revisions to the schedule shall be reported to and approved by the DMO.

5. Audit Execution
   a. After a brief meeting with the Director of Marine Operations or Master, the auditor shall:
      i. Conduct an opening meeting to outline the scope and objectives of the audit as well as the methods to be used for carrying out and reporting on the audit.
      ii. Establish a schedule for a representative to be available in each area to be audited.
   b. The audit shall be conducted with the minimum interruption of business. The auditor should take adequate notes so that findings and observations may be accurately reported. The audit is intended to confirm the implementation of the Safety Management System and its effectiveness. Nonconformities and Observations, and the evidence for them, shall be communicated orally to the auditee as they are established.
   c. The auditor(s) must take the time to properly document the findings obtained during the audit. Notes made in the audit checklists should support any Observations or Nonconformities determined.
   d. The auditor shall record the Observation or Nonconformity in Sections 1 through 3 on the "NONCONFORMITY REPORT - CORRECTIVE ACTION REQUEST (NCCAR)" (Appendix). This form is designed to assist the internal auditor while conducting the audit.
   e. At the closing meeting, the auditor shall present all Nonconformities and Observations to the Director of Marine Operations or Master as applicable, who shall then sign a printout of each Nonconformity or Observation on the NCCAR. This signature is an acknowledgment that the Nonconformity or Observation has been identified by the auditor and is not an admission of wrongdoing.

6. Audit Report

a. To assist in the preparation of the audit report, the auditor may write a brief summary report on "INTERNAL AUDIT REPORT" form (Appendix SMF 12.1.3).
b. The audit report shall include:
    i. The list of Nonconformities by number with a brief summary.
    ii. All Observations noted by the auditor
        1. All Nonconformities and Observations shall specifically refer to the appropriate section of the ISM Code and/or SMM.
c. The completed audit checklist and Nonconformity reports shall become the supporting documentation for the Audit Report. It is considered an important tool in the formulation of the next audit.
d. The Audit Report and supporting documents shall be filed in the Safety Management System files maintained in the Ship Operations Office.

5. Follow-Up Action
    ii. All Nonconformities documented as a result of an Internal Audit shall be subject to tracking and follow-up activities in accordance with SMM 9.1

Records

The audit checklists and audit reports are considered Safety Management System records and should be retained and readily available for future audits.

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12.2 Management Review

Management Review

Management reviews the Safety Management System on a regular basis to ensure its continuing suitability, adequacy, and effectiveness. This review includes assessing opportunities for improvement and the need for changes to the Safety Management System, including the policy and associated objectives. More frequent reviews may be held to address corrective actions on pertinent issues and to review the effectiveness of prior corrective actions.

The ISM Code requires at least an annual Management Review; VIMS Marine Operations will meet this requirement via a "rolling review" process involving reviews at least once per quarter, to make up a complete review of the SMS at least once per year.

The need for workspace, equipment, and other relevant items are reviewed during management review meetings with the goal of achieving continued safety and security performance. The departments and functions reporting to the management meetings are responsible for implementing the safety, security, and environmental programs promulgated by the Safety Management System.

Review Input

The input to the reviews held by management may include:

1. Internal and external audit reports.
2. Service performance and fulfillment of requirements, including regulatory compliance and regulatory/SMS documentation.
3. Observations, Nonconformities, Hazardous Occurrences and Accidents, both completed and outstanding.
4. Customer feedback.
5. Corrective and preventative action taken and their effectiveness.
6. Communication from interested parties.
7. Follow-up from previous management reviews, planned changes and their effects on the management system.
8. Recommendations for improvement.
9. The possible need for changes in policy, objectives, and other system elements based upon the reviewed results, changing circumstances (legislative, change of focus, etc.), and the commitment to continual improvement.

Review Output

The output from the review by management documents any decisions and actions related to:

1. Improvement of the effectiveness of the Safety and Security Management System and its processes.
2. Improvement of services.
3. Resource needs.

Records

Quarterly meetings will be recorded on form (SMF 6.8). The 4th quarterly meeting will be considering the Management Annual Review and will use form (SMF 12.2). These will be retained on file as part of the Safety Management System.

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Section 13: Certification and Verification

External Audits

The DP is responsible for ensuring that the VIMS Marine Operations Safety Management System in compliance with relevant regulations.

Part of this responsibility lies in ensuring that routine internal audits are conducted of the system, and formal reports are documented of those audits

The DP ensures that nonconformities found during these audits are responded to the external auditing body within the time limits specified by these regulatory bodies, and that the approved corrective action is implemented within the specified times.

VIMS Marine Operations will maintain Audit Schedules using the **Computerized Maintenance Management Software (CMMS)**. Critical dates will be listed on the Critical Annual Deadlines for ISM Compliance.

Special ISM Code Documents

As it is not a requirement due to tonnage and nature of work that any VIMS vessel operate under a certified Safety Management System, the SMS will not seek external certification or an ISM Code Document of Compliance (DOC).

However, should the nature of the operations change as to require formal certification, or should the Director of Marine Operations determine that it be prudent to certify the Safety Management System, then the Director of Marine Operations may do so by applying for a Safety Management Certificate (SMC).

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Form Number	Title	Rev. No.	Revision Date
SMF 3.4(a)	Risk Assessment	1	01 Nov 2023
SMF 3.4(b)	Job Safety Analysis (JSA)	1	01 Nov 2023
SMF 5.1	Master's Safety Management System Review	1	01 Nov 2023
SMF 6.1	Employee Annual Review	1	01 Nov 2023
SMF 6.2	Crew-Member Orientation	1	01 Nov 2023
SMF 6.3	Non-Crewmember Orientation	1	01 Nov 2023
SMF 6.4	Safety Meetings	1	01 Nov 2023
SMF 6.5.1	Qualifications – Standing a Navigational Watch	1	01 Nov 2023
SMF 6.5.2	Qualifications – Conducting Engine Room Rounds	1	01 Nov 2023
SMF 6.5.3	Qualifications – Heavy Equipment Operator	1	01 Nov 2023
SMF 6.5.4	Qualifications – Small Boat Operator	1	01 Nov 2023
SMF 7.5.1	Pre-Sail Checklist	1	01 Nov 2023
SMF 7.13(a)	Fuel/Oil Operations Checklist	1	01 Nov 2023
SMF 7.13(b)	Pre-Fueling Checklist	1	01 Nov 2023
SMF 7.23	Small Boaty Ops Checklist	1	01 Nov 2023
SMF 8.1.1	Drills	1	01 Nov 2023
SMF 8.1.2	Training	1	01 Nov 2023
SMF 9.2	OBSERVATION NON-CONFORMITY REPORT/CORRECTIVE ACTION REQUEST (NCCAR)	1	01 Nov 2023
SMF 9.3	NEAR MISS REPORT	1	01 Nov 2023
SMF 9.4	MARINE CASUALTY/INCIDENT REPORT		

VIMS William & Mary Virginia Institute of Marine Science	Appendix: SMF 3.4(a) Risk Assessment	
Marine Ops:	Originator:	Approved By:
Safety Management System	T. R. Kirkpatrick	Tim N. Turner

SMF 3.4(a): Risk Assessment

Forms

1 Overview

1.1 *As per the vessel's SMS Manual, the purpose of the procedure is to set forth policies and procedures for risk assessment aboard VIMS Vessels. This program is intended to enhance safety at sea, prevention of human injury or loss of life, and avoidance of damage to the environment, in particular to the marine environment and to property. Risk Assessment is intended to be an ongoing and continuous process that can effectively address the risk of both routine and non-routine operations, engendering a culture of safety so that the assessment of potential hazards becomes second nature.*

REQUIRED

1.2 Risk Assessment Number

2 Definitions

2.1 *Risk Assessment: Risk Assessment is a process that includes identifying hazards and analyzing or evaluating the risk associated with those hazards to determine if existing controls are adequate, or if additional controls to eliminate or reduce the risk to an acceptable level are needed.*

3 Risk Assessment Evaluation

VIMS | William & Mary Virginia Institute of Marine Science	**Appendix: SMF 3.4(a) Risk Assessment**	
Marine Ops:	Originator:	Approved By:
Safety Management System	T. R. Kirkpatrick	Tim N. Turner

3.1 Activity(s) Involving Risk:	REQUIRED
3.2 Risks Associated with Activity:	REQUIRED
3.3 *Using the Risk Assessment Table, determine the level of risk by applying the Likelihood of Consequences to the Severity of Consequences.*	
3.4 Risk #1: What is the Risk?	REQUIRED
3.5 Risk #1: Likelihood of Consequence	REQUIRED
3.6 Risk #1: Severity of Consequence	REQUIRED
3.7 Risk # 1: Overall Risk	REQUIRED
3.8 Risk #2: What is the Risk?	
3.9 Risk #2: Likelihood of Consequence	
3.10 Risk #2: Severity of Consequence	

3.11	Risk # 2: Overall Risk
3.12	Risk #3: What is the Risk?
3.13	Risk #3: Likelihood of Consequence
3.14	Risk #3: Severity of Consequence
3.15	Risk # 3: Overall Risk
3.16	*High risk activities should be avoided if at all possible, unless by avoiding the activity that would place the crew and vessel in greater risk. Should a medium or high risk be determined to exist then continue on to a Job Safety Analysis (JSA) to determine what controls can be put in place to mitigate the hazards of each defined risk.*
3.17	*Should more than 3 risks be identified then another Risk Assessment form should be completed.*

4	**Approved By:**	To be completed in Wheelhouse by Captain
5	**Reviewed By:**	To be completed in Shore by Safety and Compliance

SMF 3.4 (b): Job Safety Analysis

Forms

1	**Job Safety Analysis**
1.1	*As per the vessels Safety Management System Manual, the purpose of the procedure is to set forth policies and procedures for Risk Assessment and Job Safety Analysis (JSA) aboard VIMS Vessels. This program is intended to enhance safety at sea, prevention of human injury or loss of life, and avoidance of damage to the environment, in particular to the marine environment and to property.*
1.2	JSA Number
2	**Definitions**
2.1	*Job Safety Analysis (JSA): The process by which an employee assesses the work-related hazards associated with a specific task. The process includes assessing the potential physical hazards of the job, determining if there are any administrative or engineering controls that will mitigate any of the hazards, and determining the personal protective equipment (PPE) needed to prevent injury.*
2.2	*Personal Protective Equipment (PPE): Is an article of clothing, or barrier that provides protection against potential hazards to safety. PPE often includes Had Hats, Eye Protection, Hearing Protection, Gloves, Clothing, Steel Toed Boots, Etc.*

VIMS William & Mary Virginia Institute of Marine Science	Appendix: SMF 3.4(a) Risk Assessment	
Marine Ops:	Originator:	Approved By:
Safety Management System	T. R. Kirkpatrick	Tim N. Turner

3 **Job Safety Analysis (JSA)**

REQUIRED

3.1 What is the activity to be completed?

REQUIRED

3.2 What type of activity is this?

REQUIRED

3.3 What are the risks associated with the activity?

REQUIRED

3.4 What safety measures (to include PPE) will be required for the activity?

REQUIRED

3.5 What are the risks to the environment?

REQUIRED

3.6 What environmental controls, if any, can be implemented to reduce the risk?

3.7 Additional Comments?

4 **Reviewed By:** To be completed in Wheelhouse by Captain

5 **Approved By MSO:** To be completed in Shore by Safety and Compliance

SMF 5.1: Master's Annual Review

Forms

1 SMS Review

1.1 *As per the vessel's Safety Management System Manual: The Master is responsible for monitoring and reviewing the Safety Management System and reporting any deficiencies to Marine Operations in accordance with other provisions of this manual, utilizing form SMF 5.1.*

2 Master's Review — To be completed in Wheelhouse by Captain

REQUIRED

2.1 Please Enter any Observations / Remarks including reference to the SMS section(s) under review.

REQUIRED

2.2 Please Enter any General Comments or Suggestions for Improvement to the SMS Sytem.

REQUIRED

2.3 Master's Name and Signature

Signatures for this section: (0)

Signatures

3 DPA Review — To be completed in Shore by Safety and Compliance

REQUIRED

3.1 Date Reviewed:

SMF 6.1: Employee's Annual Review

Forms

1 **SMS Employee Review**

1.1 *As per the vessel's Safety Management System Manual: All crew will read and review the current Safety Management Manual annually, based on date of hire.*

Full-time shore side personnel will read the following sections annually: 1-4, 9, 12, 13, and Appendices A & B. The review by each person will be documented on SMF 6.1.

New employees will complete this review within 30 days of their initial orientation as described in SMM 6.2

REQUIRED

1.2 Employee Name:

REQUIRED

1.3 Employee has reviewed Chapter 1-13, Appendixes, and JSA's of the Safety Management Manual.

Done ☐

REQUIRED

1.4 Employee's Comments, (If referencing SMM, please specify section referencing):

Signatures for this section: (0)

Signatures

VIMS William & Mary Virginia Institute of Marine Science	Appendix: SMF 3.4(a) Risk Assessment	
Marine Ops:	Originator:	Approved By:
Safety Management System	T. R. Kirkpatrick	Tim N. Turner

2 **Employee:** To be completed in Wheelhouse by Crew

REQUIRED

2.1 Employee

REQUIRED

2.2 By checking this box I certify that I have read and understand the vessel's Safety Management System.

Done ☐

2.3 Comments or Questions:

3 **Master's Approval:** To be completed in Shore by Captain

REQUIRED

3.1 Employee has reviewed and displayed competency in the vessel's Safety Management Manual, and System to the Master's satisfaction.

Done ☐

SMF 6.2: Crewmember Orientation

Forms

1 **Purpose:**

1.1 *As per the vessel's Safety Management System Manual (SMM 6.2) prior to getting underway any new crewmembers shall be oriented to the vessel using the Crew-Member Orientation Checklist which complies with STCW standards 46 CFR 15.1105. New Crewmembers include crewmemembers who have not sailed on the vessel within 12 months. Crewmember orientation shall be completed by the Master or Master's designee, completing all the following applicable items to the vessel.*

2 **Crew-member Safety Orientation**

REQUIRED

2.1 Name of Person Being Oriented:

REQUIRED

2.2 Vessel being oriented to

REQUIRED

2.3 Date:

REQUIRED

2.4 Time:

Signatures for this section: (0)

Signatures

3 Administrative

REQUIRED

3.1 Discuss Characteristics / Purpose of the Vessel

Done ☐

REQUIRED

3.2 Discuss General Layout of the Vessel

Done ☐

REQUIRED

3.3 Discuss Terms / Equipment Specific to the Vessel

Done ☐

REQUIRED

3.4 Credentials / Medical Card verified and up to date.

Done ☐

REQUIRED

3.5 Discuss Crew Responsibilities

Done ☐

REQUIRED

3.6 Drug and Alcohol Policy

Done ☐

REQUIRED

3.7 Harassment Policy

Done ☐

4 **Safety and Emergency**

REQUIRED

4.1 Location of Station Bill

Done ☐

REQUIRED

4.2 Alarms & Muster Location as per Station Bill

Done ☐

REQUIRED

4.3 Location of Survival Suits and Donning

Done ☐

REQUIRED

4.4 Location of Life Jackets and Donning

Done ☐

REQUIRED

4.5 Location of PPE and PPE Policy

Done ☐

REQUIRED

4.6 Location of Life Rafts

Done ☐

REQUIRED

4.7 Location of Life Rings and Strobes

Done ☐

REQUIRED

4.8 Location of Flares and Jump Bag

Done ☐

REQUIRED

4.9 Location of EPIRB

Done ☐

REQUIRED

4.10 Location of First Aid Kit / Eye Wash Stations

Done ☐

REQUIRED

4.11 Location of AED

Done ☐

REQUIRED

4.12 Procedures for Abandon Ship

Done ☐

REQUIRED

4.13 Procedures for a MOB

Done ☐

REQUIRED

4.14 Other Distress Signals (PLB's, DSC, SART, Sat Coms, etc.)

Done ☐

REQUIRED

4.15 Emergency Lighting

Done ☐

REQUIRED

4.16 Loss of Steering / Loss of Power

Done ☐

REQUIRED

4.17 General Operational Safety (Slip, Trip, Falls, Ladder Safety and Situational Awareness)

Done ☐

5 **Fire Fighting**

5.1 Location of Safety Plan

Done ☐

REQUIRED

5.2 Fire Detection Systems

Done ☐

5.3 Alarm System Location and Procedures for Use

Done ☐

REQUIRED

5.4 Class and Location of Portable Fire Extinguishers

Done ☐

5.5 Fixed Fire Fighting Systems

Done ☐

REQUIRED

5.6 Fire Fighting Stations

Done ☐

REQUIRED

5.7 Emergency Fuel Shutoff

Done ☐

REQUIRED

5.8 Emergency Ventilation Shutoff

Done ☐

REQUIRED

5.9 Fire Pump Activation

Done ☐

REQUIRED

5.10 Procedures for Fighting an Engine Room Fire

Done ☐

REQUIRED

5.11 Procedures for Fighting a Galley Fire

Done ☐

REQUIRED

5.12 Procedures for Fighting a Living Space Fire

Done ☐

REQUIRED

5.13 Procedures for Fighting a Lab Space Fire

Done ☐

5.14 Procedures for Fighting an Auxiliary Room Fire

Done ☐

REQUIRED

5.15 Procedures for Fighting a Deck Fire

Done ☐

REQUIRED

5.16 Procedures for Fighting a Wheelhouse Fire

Done ☐

6 **Flooding Procedures**

6.1 Load Line Certificate / Location of Load Lines and Drafts

Done ☐

REQUIRED

6.2 Location / Capacity / Designation of Tanks

Done ☐

REQUIRED

6.3 Maintaining Stability / Pitch and List

Done ☐

REQUIRED

6.4 Bilge Piping Manifold / De-watering

Done ☐

REQUIRED

6.5 De-watering Devices

Done ☐

REQUIRED

6.6 Damage Control Kit

Done ☐

7 **Fueling / Hazardous Materials / Pollution Prevention**

REQUIRED

7.1 Fueling Procedures / Risk Management

Done ☐

7.2 Fuel Manifold / Fuel Transfer Pump

Done ☐

7.3 Emergency Fuel Transfer Pump Shutoff

Done ☐

REQUIRED

7.4 Fuel Fills, Vents, Coffer Dams

Done ☐

7.5 Oil Spill Kit / Spill Response

Done ☐

REQUIRED

7.6 Storage of Flammable Materials

Done ☐

REQUIRED

7.7 Reporting a Spill

Done ☐

8 **House Keeping**

8.1 Internal Communications

Done ☐

8.2 Prohibited / Confined Spaces

Done ☐

REQUIRED

8.3 Water Usage

Done ☐

REQUIRED

8.4 Oil Slickers and Sea Boots

Done ☐

8.5 Meals

Done ☐

REQUIRED

8.6 Head, Hygiene, and Cleanliness

Done ☐

REQUIRED

8.7 Heavy Weather Preparation

Done ☐

REQUIRED

8.8 Maintaining Ready to Sail Status

Done ☐

VIMS | William & Mary Virginia Institute of Marine Science	**Appendix: SMF 3.4(a) Risk Assessment**	
Marine Ops:	Originator:	Approved By:
Safety Management System	T. R. Kirkpatrick	Tim N. Turner

9 **Approved By:** To be completed in Wheelhouse by Captain

REQUIRED

9.1 Captain:

10 **Reviewed By:** To be completed in Shore by Safety and Compliance

REQUIRED

10.1 Marine Safety Officer:

SMF 6.3: Non-Crewmember Orientation

Forms

1 Non Crewmember Safety Orientation

1.1 *As per the vessel's Safety Management System Manual (SMM 6.3) prior to getting underway any non-crewmember shall be oriented to the vessel using the Non-Crewmember Orientation Checklist which complies with STCW standards 46 CFR 15.1105. Non-crewmembers include individuals who have not sailed on the vessel within 12 months. Non-crewmember orientation shall be completed by the Master or Master's designee, completing all the following applicable items to the vessel.*

REQUIRED

1.2 Personnel Oriented:

2 Orientation

REQUIRED

2.1 Described the characteristics and layout of the vessel.

Done ☐

REQUIRED

2.2 Explained terms and equipment specific to the vessel.

Done ☐

3 **Safety**

REQUIRED

3.1 Discussed locations of the Station Bill.

Done ☐

REQUIRED

3.2 Discussed Alarms and Muster Stations (MOB / Abandon Ship / Fire / Flooding / Etc.)

Done ☐

REQUIRED

3.3 Discussed locations of Survival Suits.

Done ☐

REQUIRED

3.4 Discussed locations of Life Jackets.

Done ☐

REQUIRED

3.5 Discussed locations of Life Rings

Done ☐

REQUIRED

3.6 Discussed locations of Life Rafts

Done ☐

REQUIRED

3.7 Discussed location of EPIRB.

Done ☐

REQUIRED

3.8 Discussed locations of Medical Equipment, including AED

Done ☐

REQUIRED

3.9 Discussed locations of Fire Fighting Equipment

Done ☐

REQUIRED

3.10 Discussed locations of PPE / PPE policies

Done ☐

REQUIRED

3.11 Discussed MOB procedures.

Done ☐

REQUIRED

3.12 Discussed Abandon Ship procedures.

Done ☐

4 **Administrative**

REQUIRED

4.1 Discussed Vessel Security Procedures / MARSEC Level(s).

Done ☐

REQUIRED

4.2 Discussed Prohibited Spaces.

Done ☐

REQUIRED

4.3 Discussed Water Usage.

Done ☐

REQUIRED

4.4 Discussed Waste Management policy.

Done ☐

REQUIRED

4.5 Discussed Pollution Prevention policy.

Done ☐

REQUIRED

4.6 Discussed Drug and Alcohol policy.

Done ☐

REQUIRED

4.7 Discussed Tobacco Policy and Smoking Areas.

Done ☐

REQUIRED

4.8 Discussed Discrimination / Harassment Placard and Policy.

Done ☐

REQUIRED

4.9 Discussed Heavy Weather Precautions.

Done ☐

REQUIRED

4.10 Discussed Oil Slicker / Sea Boot stowage.

Done ☐

REQUIRED

4.11 Discussed how to use head, and personal hygiene standards.

Done ☐

5 **Approved By:** To be completed in Wheelhouse by Captain

REQUIRED

5.1 Captain:

6 **Reviewed By:** To be completed in Shore by Safety and Compliance

REQUIRED

6.1 Marine Safety Officer:

SMF 6.4: Safety Meetings

Forms

1 Overview

1.1 *Safety Meetings are to be conducted prior to an activity / job / evolution. A safety meeting may be, but is not required to be triggered by, a Risk Assessment and Job Safety Analysis. A Safety Meeting may also be triggered by a Near Miss, or by a crew member that perceives that a situation or procedure is unsafe. Further, Safety Meetings shall occur no less than quarterly.*

2 Safety Meeting

REQUIRED

2.1 What was the topic?

REQUIRED

2.2 What hazards were discussed?

REQUIRED

2.3 What safety controls were discussed?

3 Regulatory and Industry Guidance

3.1 Describe any regulatory guidelines provided by potential contracted party or industry (if applicable).

4 **Attendance**

REQUIRED

4.1 Participants

Signatures for this section: (0)

Signatures

5 **Approved By:** To be completed in Wheelhouse by Captain

6 **Reviewed By:** To be completed in Shore by Safety and Compliance

SMF 6.5.1 Qualifications – Standing a Navigational Watch

Forms

1 **Overview**

1.1 *As per the vessel's Safety Management System Manual, any personnel standing a navigational watch shall be trained and certified by the Master in the operating procedures for starting the Main Engines, the Bow Thruster, operating the Finnøy System, using the steering system, and the Navigational Equipment.*

REQUIRED

1.2 Personnel Being Qualified:

REQUIRED

1.3 Date of Qualification:

REQUIRED

1.4 Time of Qualification:

Signatures for this section: (0)

Signatures

2 **Training / Engine Operations**

REQUIRED

2.1 Review Engine Operating Procedures.

Done ☐

REQUIRED

2.2 Demonstrate how to start the main engines.

Fail ○ Pass ○

REQUIRED

2.3 Demonstrate how to check / reset engine hours and how to clear trip miles and fuel consumption.

Fail ○ Pass ○

REQUIRED

2.4 Demonstrate how to shut down engines.

Fail ○ Pass ○

3 **Training / Finnøy System (R/V Virginia Only)**

3.1 Review Operating Procedures for the Finnøy in the SMS Manual.

Done ☐

3.2 Demonstrate how to use RPM and Pitch Controls.

Fail ○ Pass ○

3.3 Discuss what RPM levels and Engine / PTO configurations are appropriate for various operations.

Fail ○ Pass ○

3.4 Demonstrate how to engage the main engine.

Fail ○ Pass ○

3.5 Demonstrate how to engage the PTO's.

Fail ○ Pass ○

3.6 Demonstrate how to switch from Individual Mode to Const. Mode, and discuss when that would be necessary.

Fail ○ Pass ○

3.7 Discuss how / when to use the Shaft Brake, and Emergency Clutch Out

Fail ○ Pass ○

3.8 Demonstrate how to switch to the Aft Station

Fail ○ Pass ○

4 **Training: Bow Thruster (R/V Virginia Only)**

4.1 Review Operating Procedures for the Bow Thruster in the SMS Manual.

Done ☐

4.2 Demonstrate how to activate the Bow Thruster

Fail ○ Pass ○

4.3 Demonstrate how to change azimuth and generate thrust..

Fail ○ Pass ○

4.4 Discuss vessel handling characteristics using the thruster.

Fail ○ Pass ○

4.5 Demonstrate how to switch to Aft Station.

Fail ○ Pass ○

5 **Training: Steering System**

REQUIRED

5.1 Review Steering System Procedures and Procedures for a Loss of Steering.

Done ☐

REQUIRED

5.2 Demonstrate how to conduct rudder swing tests.

Fail ○ Pass ○

5.3 Demonstrate how to switch steering pumps (as applicable).

Fail ○ Pass ○

5.4 Demonstrate how to switch steering from Standby to NFU / FFU / Auto. (as applicable)

Fail ○ Pass ○

5.5 Discuss emergency procedures for loss of steering. (as applicable)

Fail ○ Pass ○

6 **Training: VHF Radios**

REQUIRED

6.1 Demonstrate how to turn VHF radios on.

Fail ○ Pass ○

REQUIRED

6.2 Demonstrate how to check the weather on the VHF Radio.

Fail ○ Pass ○

REQUIRED

6.3 Demonstrate how to send a DSC Message.

Fail ○ Pass ○

REQUIRED

6.4 Demonstrate how to activate a distress signal.

Fail ○ Pass ○

REQUIRED

6.5 Discuss when to make security calls.

Done ☐

7 **Training: Lights and Sound**

REQUIRED

7.1 Demonstrate how to turn on a lighting combination for Underway, Fishing, Trawling, and at Anchor.

Fail ○ Pass ○

REQUIRED

7.2 Demonstrate how to sound the signal for a vessel underway in restricted visibility.

Fail ○ Pass ○

REQUIRED

7.3 Demonstrate how to sound the danger signal.

Fail ○ Pass ○

8 **Training: Radar**

REQUIRED

8.1 Demonstrate how to turn on / off.

Fail ○ Pass ○

REQUIRED

8.2 Demonstrate how to adjust gain / rain / sea.

Fail ○ Pass ○

REQUIRED

8.3 Demonstrate how to set an EBL / VRM on a target.

Done ☐

REQUIRED

8.4 Demonstrate how to acquire a target to determine CPA / TCPA.

Fail ○ Pass ○

9 **Training: AIS**

REQUIRED

9.1 Demonstrate how to turn on and off.

Fail ○ Pass ○

REQUIRED

9.2 Demonstrate how to set Underway Status / Destination and ETA.

Fail ○ Pass ○

10 **Training: Rosepoint**

REQUIRED

10.1 Demonstrate how to update charts.

Fail ○ Pass ○

REQUIRED

10.2 Demonstrate how to check tidal / current levels at a given location.

Fail ○ Pass ○

REQUIRED

10.3 Demonstrate how to plot a waypoint.

Fail ○ Pass ○

REQUIRED

10.4 Demonstrate how to log a man overboard.

Fail ○ Pass ○

REQUIRED

10.5 Demonstrate how to plot a route / calculate ETA

Fail ○ Pass ○

REQUIRED

10.6 Demonstrate how to access coast pilots.

Fail ○ Pass ○

11 Training: Multi-Function Display Units

REQUIRED

11.1 Demonstrate how to navigate between plotter / depth sounder / radar.

Fail ○ Pass ○

REQUIRED

11.2 Demonstrate how to check Tide / Current.

Fail ○ Pass ○

REQUIRED

11.3 Demonstrate how to plot a waypoint.

Fail ○ Pass ○

REQUIRED

11.4 Demonstrate how to plot a route.

Fail ○ Pass ○

REQUIRED

11.5 Demonstrate how to log a Man Overboard.

Fail ○ Pass ○

11.6 Demonstrate how to acquire an AIS target and plot CPA /TCPA. (as applicable)

Fail ○ Pass ○

REQUIRED

11.7 Demonstrate how to change range on depth sounder / change measurement units.

Fail ○ Pass ○

12 **Training: Administrative**

REQUIRED

12.1 Review and sign the Master's Standing Orders

Done ☐

REQUIRED

12.2 Discuss deck log / log keeping.

Done ☐

REQUIRED

12.3 Discuss how to log a Float Plan.

Done ☐

REQUIRED

12.4 Discuss Helm Connect / watchstanders responsibilities to log Pre-Sail Checklists, Watch Turnovers, Near Miss Reports, Risk Assessment, Tasks, Etc.

Done ☐

13 **Qualified By:** To be completed in Wheelhouse by Captain

14 **Reviewed By:** To be completed in Shore by Safety and Compliance

SMF 6.5.2 Qualifications – Conducting Engine Room Rounds

Forms

1 **Overview**

1.1 *As per the vessel's Safety Management System Manual, any new crew-member who will be required to conduct engine room rounds shall be trained on the Engineer's Standing Orders, and expectations for conducting engine room rounds.*

REQUIRED

1.2 Personnel Being Qualified:

REQUIRED

1.3 Date:

REQUIRED

1.4 Time:

Signatures for this section: (0)

Signatures

2 **Training (As applicable to vessel)**

VIMS | William & Mary Virginia Institute of Marine Science	**Appendix: SMF 6.2 Qualifications – Conducting Engine Room Rounds**	
Marine Ops:	Originator:	Approved By:
Safety Management System	T. R. Kirkpatrick	Tim N. Turner

REQUIRED

2.1 Reviewed Engineer's/Port Engineer's standing orders. Location of orders and content.

Done ☐

REQUIRED

2.2 Trainee understands and has signed the Standing Orders

No ◯ Yes ◯ N/A ◯

2.3 Reviewed Engine Room Hourly Inspection Log (R/V Virginia)

Done ☐

REQUIRED

2.4 Toured engine room identifying hazards such as low overhangs, charged equipment, slip hazards, etc.

Done ☐

REQUIRED

2.5 Engine Oil Pressure Range (60-70)

Done ☐

REQUIRED

2.6 Engine Coolant Range (anything over 200°)

Done ☐

2.7 Transmission Inlet Coolant. Temperature gauge location and range (30° at the inlet - 40° at the discharge / 40° - 50° during the summer) (R/V Virginia).

Done ☐

2.8 Transmission Cooling Pump. How to turn it on / verify it is circulating. (R/V Virginia)

Done ☐

REQUIRED

2.9 Generator. Coolant level check.

Done ☐

2.10 Chiller. Verify that it is on and in proper mode. Check for warnings. (R/V Virginia)

Done ☐

2.11 Steering Gear Compartment. Check for alarms, leaks, and tank temperature. (R/V Virginia)

Done ☐

REQUIRED

2.12 Engine Room Air Supply requirements.

Done ☐

2.13 Hydraulic Cooling Pumps. Check on Auto / Check for Prime (R/V Virginia)

Done ☐

REQUIRED

2.14 Generator Control Panels. Check panel on on-line generator. (Oil Pressure Range / Coolant Range)

Done ☐

REQUIRED

2.15 Main Engine Panel. Check Panel for whichever engine / engines are running, (Oil Pressure Range / Coolant Temperature Range)

Done ☐

2.16 HPU's. Off if not in use. (R/V Virginia)

Done ☐

2.17 Oil Transfer Pump / Transfer Fuel Valves. Off, unless polishing fuel. (R/V Virginia)

Done ☐

2.18 Maretron. Checking the day tank capacity (R/V Virginia).

Done ☐

REQUIRED

2.19 Look / Smell for anything abnormal.

Done ☐

3 **Qualified By:** To be completed in Engineers Desk by Engineer

4 **Approved By:** To be completed in Wheelhouse by Captain

5 **Reviewed By:** To be completed in Shore by Safety and Compliance

SMF 6.5.3 Qualifications – Heavy Equipment Operator

Forms

1	**Operational Certification for Deck Crane and other Heavy Equipment**	
1.1	*As per the vessel's Safety Management System Manual; Only individuals qualified by the Chief Engineer and approved by the Master may operate any of the vessel's heavy equipment, defined as; equipment using stored energy (primarily hydraulic) to lift, move, or deploy another object or piece of scientific equipment.*	
1.2	Personnel Being Qualified:	REQUIRED
1.3	Date of Qualification:	REQUIRED
1.4	Time of Qualification:	REQUIRED

2	**Operational Sign Off Checklist:**	
2.1	Trainee familiar with the location of all emergency stops	REQUIRED

No Yes N/A

REQUIRED

2.2 Trainee started individual equipment

No Yes N/A

REQUIRED

2.3 Trainee stopped equipment using normal means and E Stops.

No Yes N/A

REQUIRED

2.4 Trainee demonstrated unfolding of the crane.

No Yes N/A

REQUIRED

2.5 Trainee demonstrated extension of the crane boom.

No Yes N/A

REQUIRED

2.6 Trainee demonstrated the safe handling of loads.

No Yes N/A

REQUIRED

2.7 Trainee demonstrated proper stowage of the crane.

No Yes N/A

REQUIRED

2.8 Trainee demonstrated safe operation of all deck equipment.

No Yes N/A

REQUIRED

2.9 Trainee:

REQUIRED

2.10 Instructor (Port/Chief Engineer):

3 **Qualified By:** To be completed in Engineers Desk by Engineer

4 **Approved By:** To be completed in Wheelhouse by Captain

5 **Reviewed By:** To be completed in Shore by Safety and Compliance

SMF 6.5.4 Qualifications – Small Boat Operator

Forms

1 Overview

1.1 *As per the vessel's Safety Management System Manual; Any persons operating the vessel's small boat must first be qualified by a qualified individual approved by the Master.*

REQUIRED

1.2 Personnel Being Qualified:

REQUIRED

1.3 Date of Qualification:

REQUIRED

1.4 Time of Qualification:

Signatures for this section: (0)

Signatures

2 Safety Inspection

VIMS | William & Mary Virginia Institute of Marine Science	**Appendix: SMF 6.5.4 Qualifications – Small Boat Operator**	
Marine Ops:	Originator:	Approved By:
Safety Management System	T. R. Kirkpatrick	Tim N. Turner

2.1 *Train individual on the following sections:*

REQUIRED

2.2 Safety Equipment (PFD's, Paddle, Lights, Sound Device, Anchor, etc.)

Done ☐

REQUIRED

2.3 Motor Inspection

Done ☐

REQUIRED

2.4 Lifting Points

Done ☐

REQUIRED

2.5 Location / Type / Maintenance of Batteries

Done ☐

REQUIRED

2.6 Communications

Done ☐

REQUIRED

2.7 Start Up Procedures

Done ☐

3 **Start Up Procedures**

3.1 *Individual demonstrated:*

REQUIRED

3.2 Pre-Start Visual Inspection

No ○ Yes ○ N/A ○

REQUIRED

3.3 Confirmation of Fuel Level

No ○ Yes ○ N/A ○

REQUIRED

3.4 Lowering Motor

No ○ Yes ○ N/A ○

REQUIRED

3.5 Priming / Choking Engine (if necessary)

No ○ Yes ○ N/A ○

REQUIRED

3.6 Shifting and Throttle Working

No ○ Yes ○ N/A ○

REQUIRED

3.7 Confirm Kill Switch Operational

No ○ Yes ○ N/A ○

REQUIRED

3.8 All individuals have a PFD

No ○ Yes ○ N/A ○

4 **Small Boat Operation**

4.1 *Have Individual Demonstrate:*

REQUIRED

4.2 Speed up, bring the boat on plane, maintain plane, slow down safely

No ◯ Yes ◯ N/A ◯

REQUIRED

4.3 Dock boat to a fixed platform (dock) and/or moving platform (ship)

No ◯ Yes ◯ N/A ◯

REQUIRED

4.4 Recover a floating object (fishing float or equivalent)

No ◯ Yes ◯ N/A ◯

REQUIRED

4.5 Make an appropriate radio call to another vessel

No ◯ Yes ◯ N/A ◯

5 **Master's Qualification:** To be completed in Wheelhouse by Captain

5.1 *The above named person has been directed and observed to have successfully operated the ship's (or user supplied) small boat through the required functions and has demonstrated proficiency and competency to the satisfaction of the ship's Master (or his designee) and is hereby certified as a small boat operator for small boats associated with the R/V Virginia and her associated science missions*

Appendix: SMF 7.5.1 Pre-Sail Checklist

Forms

1 **Pre-Sail Checklist/Cruise Plan**

1.1 *In accordance with the Safety Management Manual, Section 7.5.1 & 7.5.2 - Pre-Sail Navigational, Documentation, Safety, and Equipment Checks and shall be conducted and documented prior to getting underway from the dock. Additionally a Cruise plan will be submitted to the Designated Person Ashore (DPA) prior to getting underway for a voyage.*

2 **Navigation / Documentation**

REQUIRED

2.1 All Persons on board have had a vessel orientation and safety briefing (Solas III, Reg. 19 Pt. 2.1, 2.2)

No ◯ Yes ◯ N/A ◯

REQUIRED

2.2 Ship's documents and Mariners Credential on board and current

No ◯ Yes ◯ N/A ◯

REQUIRED

2.3 Total Fuel on Board (Gallons)

REQUIRED

2.4 Water on Board (Gallons)

REQUIRED

2.5 Lube Oil on Board (Gallons)

REQUIRED

2.6 Dirty Oil on Board (Gallons)

REQUIRED

2.7 Forward Draft:

REQUIRED

2.8 Aft Draft:

REQUIRED

2.9 Forepeak Ballast (%)

REQUIRED

2.10 Starboard Ballast (%)

REQUIRED

2.11 Port Ballast (%)

REQUIRED

2.12 Charts and or Electronic Charts and Documents (Coast Pilots, Light Lists, Tide and Current Charts, etc.) on board and updated. (Solas V, Reg. 27) (NVIC 01-16)

No ◯ Yes ◯ N/A ◯

REQUIRED

2.13 Local Notice to Mariners current and reviewed (Solas V, Reg. 27)

No ◯ Yes ◯ N/A ◯

REQUIRED

2.14 Weather forecasts reviewed, conditions safe for sailing and operations

No ◯ Yes ◯ N/A ◯

REQUIRED

2.15 Appropriate Day Shapes on board

No ◯ Yes ◯ N/A ◯

REQUIRED

2.16 Sound signaling devices, horn and bell, operational (46 CFR 131.505) (33 CFR 164.25(d))

Fail ◯ Pass ◯

REQUIRED

2.17 Navigational lights / spot lights / instrument lights operational (Solas V. Reg.19)

Fail ◯ Pass ◯

REQUIRED

2.18 VHF Radio's operational

Fail ◯ Pass ◯

REQUIRED

2.19 GPS operational

Fail ◯ Pass ◯

REQUIRED

2.20 Radars operational

Fail ◯ Pass ◯

REQUIRED

2.21 AIS operational

Fail ○ Pass ○

REQUIRED

2.22 Depth Sounder operational

Fail ○ Pass ○

REQUIRED

2.23 Internal Communications operational

Fail ○ Pass ○

REQUIRED

2.24 Port Steering Pump tested (Solas V, Reg. 26) (33 CFR 164.25 (a) (1))

Fail ○ Pass ○

REQUIRED

2.25 Starboard Steering Pump tested (Solas V, Reg. 26) (33 CFR 164.25 (a) (1))

Fail ○ Pass ○

REQUIRED

2.26 NFU, FFU tested (Solas V, Reg. 26) (33 CFR 164.25 (a) (1))

Fail ○ Pass ○

2.27 Comments:

3 Safety

REQUIRED

3.1 All Ships Life Saving Appliance Inspections and Inventories up to date on CMMS.

No ○ Yes ○ N/A ○

3.2 Comments:

4 Engineering & Equipment

REQUIRED

4.1 All Alarms checked inspected and up to date as per ship's safety inspection checklist

No ◯ Yes ◯ N/A ◯

REQUIRED

4.2 All Engineering (Main Engines, Generators, MSD, Etc.) and Deck Equipment (Cranes, Winches, Load Handling Appliances, Etc.) current on maintenance in CMMS

No ◯ Yes ◯ N/A ◯

REQUIRED

4.3 All flammable materials and tools are properly stowed

No ◯ Yes ◯ N/A ◯

REQUIRED

4.4 Decks ready to sail

No ◯ Yes ◯ N/A ◯

REQUIRED

4.5 Shore Power has been cast off

No ◯ Yes ◯ N/A ◯

REQUIRED

4.6 Gangway up

No ◯ Yes ◯ N/A ◯

4.7 Comments:

5 Cruise Plan

5.1	Crew Onboard	REQUIRED
5.2	Estimated time of departure	REQUIRED
5.3	Departing from	REQUIRED
5.4	Estimated time of arrival	REQUIRED
5.5	Arriving to	REQUIRED
5.6	Scientific Operations	
5.7	Cruise Plan	

6 EPA General Discharge

6.1	EPA General Discharge Permit Inspection - A routine visual inspection has been conducted to ensure that cargo compartments, machinery spaces, deck areas, and other accessible areas of this vessel including all accessible areas where chemicals, oils, dry cargo or other materials are stored, mixed and used are clear of garbage, oil and any visible pollutant or constituent of concern that could be discharged into the water. Pollution prevention mechanisms are in proper working order. Inspections, operating procedures, and checklists for pollution control can be found in Safety Management System	REQUIRED

Manual and the Computerized Maintenance Management System. Training and inspections have been are documented.

Done ☐

7 **Approved By:** To be completed in Wheelhouse by Captain

8 **Reviewed By:** To be completed in Shore by Safety and Compliance

SMF 7.13(a) Fuel/Oil Operations Checklist

Forms

1 **Fuel / Oil Operations**

1.1 *As per the vessel's Safety Management System Manual; prior to proceeding with any fueling operation, a checklist should be completed by the PIC to ensure that the crew has reduced to the best of their ability any possibility of contaminating the water via an oil spill or fueling incident.*

Only a qualified PIC, familiar with the fuel / oil system and oil spill response procedures of the SMS shall be permitted to conduct any fuel / oil operations.

2 **Fuel / Oil Ops Checklist**

REQUIRED

2.1 Person In Charge (PIC) of Fuel / Oil Ops

REQUIRED

2.2 An inspection of the engine room and engineering spaces ensuring that all hoses, manifold piping, valves, pumps, and other relatable equipment are in serviceable order, free from leaks, and in proper alignment for transfer..

Fail ◯ Pass ◯

REQUIRED

2.3 Proper containment measures have be taken as per the requirements of the SMS procedures for fueling and fuel / oil transfers.

Fail ◯ Pass ◯

REQUIRED

2.4 Communications have been established with the wheelhouse.

Done ☐

REQUIRED

2.5 Master has been notified of intent of the fuel / oil operations and has given consent to begin transfer.

Done ☐

Signatures for this section: (0)

Signatures

3 **Approved By:** To be completed in Engineers Desk by Engineer

SMF 7.13(b) Pre-Fueling Checklist

Forms

1 **Overview**

1.1 *As per the vessel's Safety Management System Manual; prior to proceeding to take on fuel from a shoreside facility, or other vessel, a checklist should be completed by the Master, or the Chief Mate, to ensure that the crew has reduced to the best of their ability any possibility of contaminating the water via an oil spill or fueling incident.*

2 **Pre-Fueling Checklist**

REQUIRED

2.1 PIC (Person in Charge) of Fueling:

REQUIRED

2.2 Fuel in Day Tank (Gallons):

2.3 Fuel in Starboard Tank (Gallons):

2.4 Fuel in Port Tank (Gallons):

REQUIRED

2.5 Beginning total fuel in gallons:

REQUIRED

2.6 How much total fuel in gallons are being taken on board?

REQUIRED

2.7 The Captain or Mate have raised the bravo flag during the day, or ignited the all-around red light during the night.

Done ☐

REQUIRED

2.8 If required by the fueling facility, a DOI (Declaration of Inspection) has been completed and signed by the PIC and shoreside vendor providing fuel.

No ○ Yes ○ N/A ○

REQUIRED

2.9 Communications have been established with the person discharging the fuel / oil product.

Done ☐

REQUIRED

2.10 Emergency Shutdown Procedure have been agreed upon by Vendor and PIC.

Done ☐

REQUIRED

2.11 If necessary, a rate of flow has been established.

No ○ Yes ○ N/A ○

REQUIRED

2.12 Crew-member is on watch by the intake manifold.

VIMS | William & Mary Virginia Institute of Marine Science	Appendix: SMF 7.13(b) Pre-Fueling Checklist	
Marine Ops:	Originator:	Approved By:
Safety Management System	T. R. Kirkpatrick	Tim N. Turner

Done ☐

REQUIRED

2.13 Vessel is ready to be fueled.

No ◯ Yes ◯ N/A ◯

3 **Approved By:** To be completed in Wheelhouse by Captain

REQUIRED

3.1 Total Gallons of Fuel Taken on Board:

REQUIRED

3.2 Fuel in Day Tank (Gallons):

3.3 Fuel in Starboard Tank (Gallons):

3.4 Fuel in Port Tank (Gallons):

REQUIRED

3.5 Total Fuel on Board:

REQUIRED

3.6 Deck Log Updated:

Done ☐

REQUIRED

3.7 Vessel is properly trimmed in accordance with the vessel's load line certificate?

No ◯ Yes ◯ N/A ◯

SMF 7.23 Small Boat Ops Checklist

Forms

1 **Overview**

1.1 *As per the vessel's Safety Management System Manual: Prior to getting underway in the small boat, a safety and operational inspection shall be conducted by either the Chief Mate, or the small boat operator under the direction of the Chief Mate.*

REQUIRED

1.2 Operator:

REQUIRED

1.3 Operator has completed the SMF 6.5.4: Small Boat Operator Qualification?

No ◯ Yes ◯ N/A ◯

Signatures for this section: (0)

Signatures

2 **Small Boat Ops. Checklist**

2.1 *Prior to lifting the small boat complete the following safety checks:*

REQUIRED

2.2 Boat is properly inflated.

Fail ○ Pass ○

REQUIRED

2.3 Boat plug is Installed.

Fail ○ Pass ○

REQUIRED

2.4 Sound signaling device aboard.

Fail ○ Pass ○

REQUIRED

2.5 Boat equipped with a signaling light, or equivalent nav lights.

Fail ○ Pass ○

REQUIRED

2.6 Boat is equipped with a rowing oar.

Fail ○ Pass ○

REQUIRED

2.7 Boat equipped with a PFD per person.

Fail ○ Pass ○

REQUIRED

2.8 Boat is equipped with an anchor (if needed).

No ○ Yes ○ N/A ○

REQUIRED

2.9 Flares onboard.

Fail ○ Pass ○

REQUIRED

2.10 First Aid Kit on board.

Fail ◯ Pass ◯

REQUIRED

2.11 VHF Radio on board / communications est. with Virginia.

Fail ◯ Pass ◯

REQUIRED

2.12 There is enough fuel on board to complete operations.

Fail ◯ Pass ◯

REQUIRED

2.13 Water / food onboard for operation and safety.

No ◯ Yes ◯ N/A ◯

2.14 Note any discrepancies / comments.

3 **Pre-sail Checks**

3.1 *Once the small boat is in the water, alongside the vessel, the following checks will be completed:*

REQUIRED

3.2 Vent on fuel tank is open.

Fail ◯ Pass ◯

REQUIRED

3.3 Engine is operational.

Fail ◯ Pass ◯

REQUIRED

3.4 Throttle engages forward.

Fail ◯ Pass ◯

REQUIRED

3.5 Throttle engages reverse.

Fail ◯ Pass ◯

4 **Approved By:** To be completed in Wheelhouse by Captain

SMF 8.1.1 Drills

Forms

1	**Drills**	
1.1	*As per the vessel Safety Management System Manual; every crew-member on board must participate in at least one Abandon-Ship Drill, one Man Overboard, and one Fire Drill every month. The drills for the crew and non-crew members must take place within 24 hours of the vessel leaving a port if more than 25 percent of the crew have not participated in abandon-ship and fire drills on board that particular vessel in the previous month.*	
1.2	Participants:	REQUIRED

2	**Scenario / Lessons Learned**	
2.1	Drill Scenario:	
2.2	Lessons Learned:	
2.3	SMM Section Referenced?	

2.4 Was the SMM section reviewed, and where needed considerations for modifications discussed?

No ◯ Yes ◯ N/A ◯

3 **Approved By:** To be completed in Wheelhouse by Captain

4 **Reviewed By:** To be completed in Shore by Safety and Compliance

SMF 8.1.2 Training

Forms

1	**Overview**
1.1	*As per the vessel's Safety Management System Manual; training shall be conducted monthly and should also be used as a means of corrective action in the event of a near miss, non-conformity, or marine incident.*
2	**Participants**
2.1	Particpants:
3	**Training**
3.1	Topic:
3.2	Description of Training:

3.3 References Used (SMS / CFR's / NVIC / Powerpoint):

3.4 Lessons Learned:

4 **Approved By:** To be completed in Wheelhouse by Captain

5 **Reviewed By:** To be completed in Shore by Safety and Compliance

SMF 9.2 Observation/Non-Conformity Report – Corrective Action Request

Forms

1 OBSERVATION / NONCONFORMITY REPORT – CORRECTIVE ACTION REQUEST (NCCAR)

1.1 *As per the vessel's Safety Management System Manual: the recording and analysis of Observations and Nonconformities can help to identify possible root causes of nonconformities that can be used to prevent reoccurrence. In addition, this procedure provides for tracking the results of observations and nonconformities for presentation to management for review.*

2 **Received By DPA:** To be completed in Shore by Director

REQUIRED

2.1 NCCAR Number

3 **SMS / ISM Reference:**

REQUIRED

3.1 Associated SMS / ISM Section:

3.2 Audit Reference Number:

4 Observation / Non-Conformity

4.1 Initiator:

REQUIRED

4.2 Date Initiated:

REQUIRED

4.3 Is this an Observation, or Non-Conformity?

REQUIRED

4.4 How was the Occurence Identified?

REQUIRED

4.5 Description of the Observation / Non-Conformity:

REQUIRED

4.6 Initiator's Recommendation for Correction Action:

5 Master's Review

To be completed in Wheelhouse by Captain

REQUIRED

5.1 Master's Recommendations:

6 DPA's Review

To be completed in Shore by Director

REQUIRED

6.1 DPA's Corrective Action Resolution:

REQUIRED

6.2 Date Recorded for Action:

REQUIRED

6.3 Corrective Action Assigned To:

REQUIRED

6.4 Date Corrective Action Due By:

7 **Master's Confirmation of Corrective Action:** To be completed in Wheelhouse by Captain

REQUIRED

7.1 Corrective Action Completed By:

REQUIRED

7.2 Date Action Taken:

REQUIRED

7.3 Corrective Action Implemented

REQUIRED

7.4 Master's name and Signature

Signatures for this section: (0)

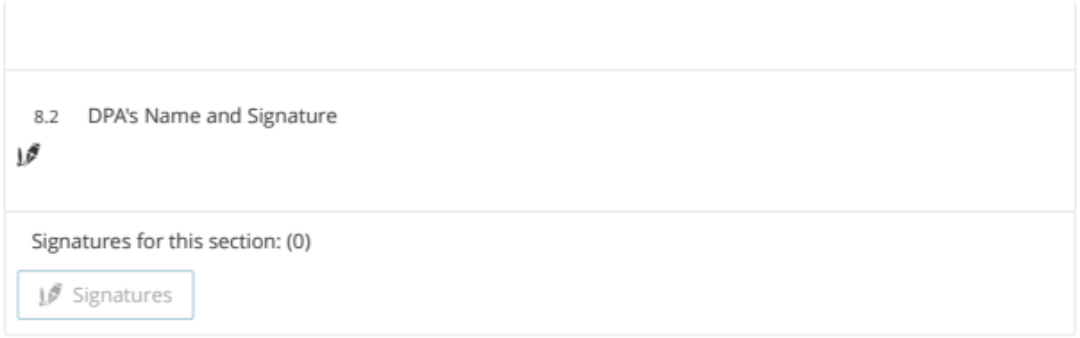
Signatures

8 **DPA's Confirmation** To be completed in Shore by Director

REQUIRED

8.1 Closed out on:

VIMS | William & Mary Virginia Institute of Marine Science	**Appendix: SMF 9.2 Observation/Non-Conformity Report – Corrective Action Request**	
Marine Ops:	Originator:	Approved By:
Safety Management System	T. R. Kirkpatrick	Tim N. Turner



SMF 9.3 Near Miss Report

Forms

1 **NEAR MISS REPORT**

1.1 *As per the vessel's Safety Management System Manual: A near miss is defined as an unplanned event in which no property was damaged and no personal injury was sustained, but where, given a slight shift in time or position, damage or injury could have occurred. Near Miss Reporting is a vital key in the Safety Management System as it allows for policies to be reviewed to determine what improvements in policy, procedures, and best practices can be made.*

The Near Miss reporting system can only be effective if the reports are anonymous, protecting the persons involved, and that there is no punitive action taken against persons that may be implicated in the report

2 **Received By DPA:** To be completed in Shore by Director

REQUIRED

2.1 Near Miss Number

3 **SMS / ISM Reference:**

REQUIRED

3.1 Associated SMS / ISM Section:

3.2 Audit Reference Number:

4 **Near Miss**

REQUIRED

4.1 Date of Near Miss:

REQUIRED

4.2 Time of Near Miss:

REQUIRED

4.3 Location:

REQUIRED

4.4 Vessel Activity:

REQUIRED

4.5 Specific Location:

REQUIRED

4.6 Describe Near Miss:

REQUIRED

4.7 Initiator's Recommendation for Remediaton of Near Miss:

5 **Master's Review:** To be completed in Wheelhouse by Captain

REQUIRED

5.1 Master's Recommendation for Remediation of Near Miss.

6 **DPA's Review** To be completed in Shore by Director

6.1 DPA's Corrective Action Resolution: REQUIRED

6.2 Date Corrective Action Assigned: REQUIRED

6.3 Corrective Action Assigned To: REQUIRED

6.4 Date Corrective Action Due By: REQUIRED

7 **Master's Confirmation of Corrective Action** To be completed in Wheelhouse by Captain

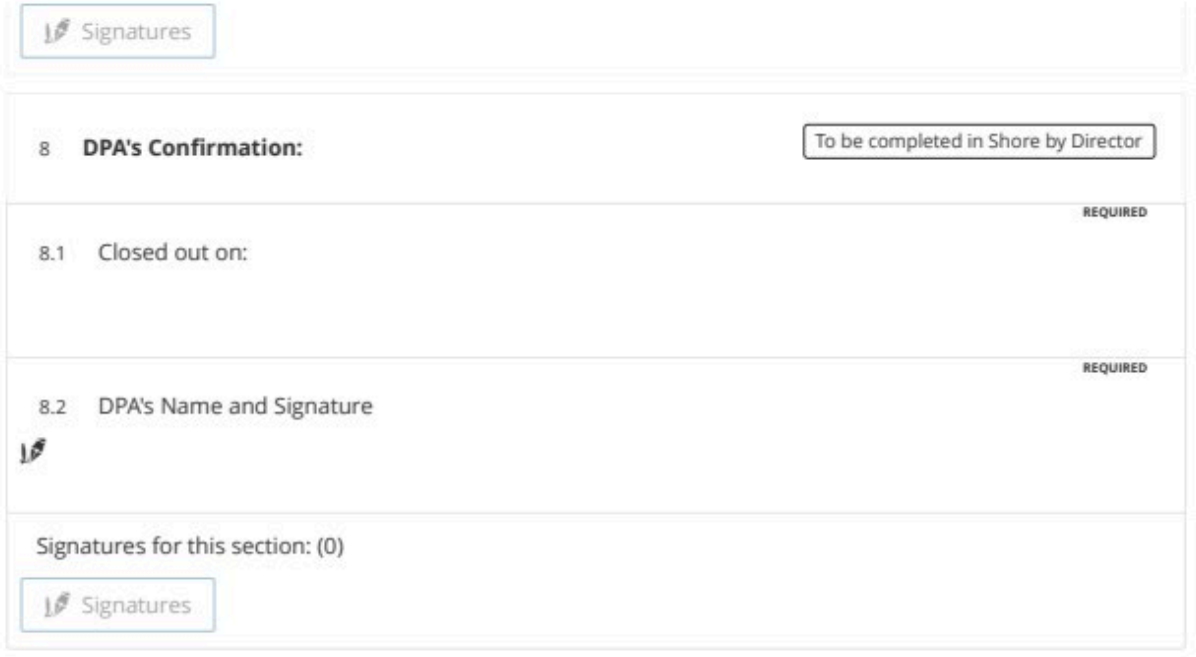
7.1 Corrective Action Completed By: REQUIRED

7.2 Date Corrective Action Taken: REQUIRED

7.3 Corrective Action Implemented: REQUIRED

7.4 Master's Name and Signature REQUIRED

Signatures for this section: (0)


Signatures
8 DPA's Confirmation:
To be completed in Shore by Director
REQUIRED
8.1 Closed out on:
REQUIRED
8.2 DPA's Name and Signature
Signatures for this section: (0)
Signatures

SMF 9.4 Marine Casualty / Incident Report

Forms

1 **Overview**

1.1 *As per the vessel's Safety Management System Manual and 46 CFR Part 4the owner, agent, master, operator, or person in charge (collectively referred to as "responsible industry parties") must determine whether an occurrence meets the criteria for notifying the Coast Guard. The NAVIC, Marine Casualty Reporting Procedures Guide, Enclosure (1) provides assistance to responsible industry parties in making such a determination.*

If a responsible industry party determines an occurrence meets the requirements for marine casualty notification, they should make every effort by any means available to immediately notify the nearest Coast Guard Command Center, after addressing any resulting safety concerns, as per 46 CFR Part 4, Subparts 4.04 and 4.05. All Notifications must include, as a minimum, the information contained in 46 CFR 4.05-5.

Additionally, as per 46 CFR 4.05-10, a written marine casualty report (CG-2692 Forms) shall be submitted no later than 5 calendar days following a reportable marine casualty. If there is any doubt whether an occurrence is a reportable marine casualty, the Coast Guard strongly encourages responsible industry parties to contact the nearest OCMI (typically the nearest Coast Guard Command Center) to determine an appropriate response.

2 **Received By DPA:** To be completed in Shore by Director

2.1 Incident Number:

3 Incident Report

REQUIRED

3.1 Person reporting the incident:

3.2 Person's involved in the incident:

REQUIRED

3.3 Date incident occurred:

REQUIRED

3.4 Time of the incident:

REQUIRED

3.5 Location of the incident:

REQUIRED

3.6 What type of incident occurred?

REQUIRED

3.7 For Reportable Incidents, which USCG Form(s) were completed?

REQUIRED

3.8 Was the William & Mary First Report of Accident / Injury Form Required?

No ◯ Yes ◯ N/A ◯

REQUIRED

3.9 Was the William & Mary Accident Investigation Form Required?

No ◯ Yes ◯ N/A ◯

REQUIRED

3.10 Description of the incident:

REQUIRED

3.11 Description of safety hazards / factors that lead to the incident:

REQUIRED

3.12 Corrective Actions that were taken after the incident:

3.13 *Should there be any witnesses to the incident, then those witnesses shall write a statement and that statement shall be attached to this form.*

4 **Master's Review:** To be completed in Wheelhouse by Captain

REQUIRED

4.1 Master's Statement:

REQUIRED

4.2 Master's Name and Signature

Signatures for this section: (0)

Signatures

5 **DPA's Review:** To be completed in Shore by Safety and Compliance

REQUIRED

5.1 DPA's Corrective Action Resolution:

REQUIRED

5.2 Date Corrective Action Assigned:

REQUIRED

5.3 Corrective Action Assigned To:

REQUIRED

5.4 Date Corrective Action Due By:

6 **Master's Confirmation of Corrective Action:** To be completed in Wheelhouse by Captain

REQUIRED

6.1 Corrective Action Completed By:

REQUIRED

6.2 Date Corrective Action Implemented:

REQUIRED

6.3 Corrected Action Implemented:

REQUIRED

6.4 Master's Name and Signature

Signatures for this section: (0)

Signatures

7 **DPA's Confirmation** To be completed in Shore by Director

REQUIRED

7.1 Closed out on:

REQUIRED

7.2 DPA's Name and Signature

VIMS | William & Mary Virginia Institute of Marine Science	**Appendix: SMF 9.4 Marine Casualty / Incident Report**	
Marine Ops:	Originator:	Approved By:
Safety Management System	T. R. Kirkpatrick	Tim N. Turner