Coronavirus (COVID-19) Considerations for Making Decisions Regarding Conducting Science Onboard U.S. Academic Research Fleet Vessels

Executive Summary

This document provides considerations and guidelines for Marine Superintendents and Chief Scientists to take into account in preparation for restarting seagoing science operations onboard U.S. Academic Research Fleet vessels. This guidance serves to address a number of important factors related to COVID-19 and the issues that must be addressed when conducting sea-going research during the current pandemic. As the nation begins to recover and restart from the Coronavirus pandemic it is important to prepare the Fleet for return to operations. This document provides a framework for assessing and mitigating the risks associated with resuming sea-going science. Safety of crew and science parties remains paramount and is thus the driving force for ensuring risks are as low as possible. Marine Superintendents and Chief Scientists are charged with considering the many elements that influence the risk of returning to sea to produce an overall risk assessment specific to each mission. This document outlines steps for producing an assessment and communicating its findings. UNOLS will continue to update this document to reflect the best available guidance for vessel operators and scientists as the pandemic unfolds and testing, both antibody and viral, becomes more widely available.

References

1. George Washington Medical Faculty Associates (GW MFA) recommended list at:https://www.unols.org/news/ships-news/unols-update-coronavirus-covid-19-and-considerations-scientists-and-operators
2. International Chamber of Shipping (ICS) – Coronavirus (COVID-19) Guidance for Ship Operators for the Protection of the Health of Seafarers https://www.ics-shipping.org/docs/default-source/resources/coronavirus-(covid-19)-guidance-for-ship-operators-for-the-protection-of-the-health-of-seafarers.pdf?sfvrsn=6
3. Centers for Disease Control (CDC) Maritime Recommendations https://www.cdc.gov/quarantine/maritime/recommendations-for-ships.html
4. CDC COVID-19 Travel Recommendations by Country https://www.cdc.gov/coronavirus/2019-ncov/travelers/map-and-travel-notices.html

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Introduction

Safety of crew and science party members is paramount in determining whether at-sea science operations can recommence on research vessels of the U.S. Academic Research Fleet (ARF). Financial considerations will not be the driving factors in making decisions related to restarting operations.

It is the intent of UNOLS and the Federal agencies to re-start seagoing oceanographic science operations as soon as they can be conducted with low risk to scientists and ship crews. This document seeks to provide guidance to ARF vessel operators and Chief Scientists regarding considerations to take into account in assessing the risk to crew and science party safety in determining whether to proceed with science cruises.

Many factors must be taken into consideration as UNOLS ship operators and Chief Scientists work together to determine whether oceanographic science can resume on ARF vessels. The Marine Superintendent and the Chief Scientist have many similar but also some different issues to consider in determining whether each feel that the risks are so great that a cruise cannot be conducted safely. It is reasonable and expected that the Marine Superintendent and the Chief Scientist may have differing opinions as to whether a science cruise can be carried out safely. As always, **either has the authority to veto a cruise after careful consideration of all appropriate factors and assessing the risk** of unsuccessful completion of science and/or adverse impacts to the ship's crew, the science party members, and the ships.

If a Chief Scientist and/or a Marine Superintendent makes the determination that the risks are unacceptable and a cruise should be postponed or canceled, they shall document the basis for that decision in writing and communicate it not only to each other but also to the UNOLS Office, NSF Ship Operations, ONR (for Navy-owned research vessels and for ONR-funded science), NSF Science Program Manager (for NSF funded science), and other agencies/institutions that fund the affected science program. Further details of this process are provided below.

As of this date – the current anticipated pause in ARF science operations continues until 1 July 2020. However, in those cases where cruises are deemed High Priority (Priority1) and the risk is determined to be Low (as discussed later in this document) the ship operator can communicate a plan for conducting science prior to 1 July with the UNOLS Office and the appropriate Federal agency to seek concurrence. Low-risk, priority 2 and 3 cruises will be considered as consistent with easing of regional restrictions on business activity. The 1 July 2020 goal of restarting science operations was established after careful consideration of the pandemic "curve" as of 6 April 2020 and the need to continue with social distancing for a sufficient period to enable "flattening" of the curve. The UNOLS Office and the Federal agencies will continue to re-evaluate progress in the battle to contain and reduce the impacts of the virus outbreak as it pertains to the safe restart of oceanographic science operations. **This document will be updated as new developments arise that further inform decision making and risk assessment related to science operations.** Updates to the document will be communicated to the UNOLS community. It is anticipated that only cruises that start and finish at U.S. ports will be permitted to proceed as science operations restart until the global pandemic is well under control and access to foreign ports can be assured.

Testing is one of the most important tools for assessing risk of infection to crew and science team. Availability and efficacy of testing for personnel sailing on an ARF vessels, and the approaches for employing testing as one element of a multi-pronged approach for minimizing risk, are still evolving. We anticipate separate guidance to come out later as more information is collected and assessed by UNOLS in concert with the Federal agencies and ship operators.

Chief Scientists and Marine Superintendents shall take the following into consideration in determining whether risk is at an acceptable level for conducting a scheduled science cruise on an ARF vessel.

Pre-Cruise Planning - Cruise Risk Assessment

Cruise Logistical Considerations

- Is effective COVID-19 testing available and in place?
- What are the virus infection rates for the port of origin and any anticipated port(s) of call?
- Where on the "epidemic curve" are load and unload port(s) and the home of crew / science party? Is it now safe to work in that port? Have Shelter in Place orders been lifted? Can necessary crew and science party personnel safely travel to the port?
- What are current rules (federal, state, local) for sheltering in place, and/or essential services that may not permit oceanographic science operations? Have those rules been lifted for the port of origin for the cruise and the end-port?
- What are institutional requirements regarding personnel working onboard ships in light of the pandemic?
- What are the current U.S Coast Guard (USCG) regulations regarding seagoing operations nationally or in that particular region?
- Domestic or foreign port? Are there potential access issues (both for air travel and for the vessel)?
- What is the distance from port? Is it possible to come into port nightly?
- What is the length of cruise?
- For longer duration deep water cruises more than a two-day steam from a US port – would a qualified medical person onboard (e.g. nurse, a physician's assistant, or a doctor) be helpful?
- Are there potential access issues for surrounding countries where the ship might need to transfer personnel ashore in the event of a medical emergency?
- Have Marine Scientific Research (MSR) clearances been obtained, and do they remain unchanged by the pandemic? The State Department has indicated that all new MSR requests will require 6 months processing, as a minimum, as a result of the virus outbreak.
- Can the cruise operate with fewer personnel to help lower the population density and increase the possibility of social distancing?
- How much travel is required by science and crew to reach the vessel? Air travel? How many different locations? Are personnel originating from or transiting through regions with significant rates of infection?

- Can Telepresence be used to reduce the number of required onboard participants? If so, what resources are necessary to increase bandwidth? What equipment?

Chief Scientist Considerations

Instrumentation and Equipment

- Can all aspects related to conducting the science be ready to support the cruise?
    - Instrumentation
    - Sampling equipment
    - Lab equipment
    - Essential systems / equipment – examples include:
        - ROV, AUV
        - Gliders
        - OBS, OBN
        - Lab or other specialized vans
        - Winches, spoolers
        - Coring
        - Portable Multi-channel Seismic
    - Can instruments be prepared in time for a cruise while there are restrictions to onsite work?
    - Can equipment be shipped in time for cruise?

Science Party

- Can the cruise operate with fewer personnel to allow for a lower density of people and higher ability to socially distance?
- Are there sufficient science personnel to complete the science mission?
  Having insufficient science party could be due to the following:
    - Institutional and/or governmental travel restrictions preventing work onboard or travel to the vessel.
    - Individuals in crew who have a high or medium risk profile, including:
        - Older Adults – age 65 or older
        - People with moderate to severe asthma
        - People with HIV
        - Groups at Higher Risk for Severe Illness, these include:
            - Those with Chronic lung disease or moderate to severe asthma
            - Serious heart conditions
            - Conditions that can cause a person to be moderately immunocompromised
            - Severe obesity
            - Diabetes
            - Chronic kidney disease and who are undergoing dialysis
            - Liver disease

      Any individuals meeting any of these criteria shall be required to stay home.

- Science Party members personal safety concerns or care/concerns for their families.

Marine Superintendent Considerations

Crew

- Are there sufficient crew to complete the cruise?

  Having insufficient ship's crew could be due to the following:
  - Institutional and/or governmental travel restrictions preventing work onboard or travel to the vessel.
  - Individuals in crew who have a high or medium risk profile, including:
    - Older Adults – age 65 or older
    - People with moderate to severe asthma
    - People with HIV
    - Groups at Higher Risk for Severe Illness, these include:
      - Those with Chronic lung disease or moderate to severe asthma
      - Serious heart conditions
      - Conditions that can cause a person to be moderately immunocompromised
      - Severe obesity
      - Diabetes
      - Chronic kidney disease and who are undergoing dialysis
      - Liver disease

    Any individuals meeting any of these criteria shall be required to stay home.
  - Crew members personal safety concerns or care/concerns for their families.

Preparing for Operations

- Establish an Outbreak Management Plan (see Chapter 4 of Reference 2). This shall include having a Social Isolation Plan to include single berths or an available stateroom in case personnel need to be isolated. If possible, these staterooms should have the ability to isolate airflow from the rest of the vessel.
- Establish a Screening process. See appendix B of Reference 2
  - Conduct initial screening 3 weeks prior to cruise mobilization using Annex B of Reference 2 as reference to identify personnel who have had or been exposed to COVID-19
  - Conduct a follow-up screening prior to travel to meet the ship to verify and/or update the status of each participant and crew member.
- Establish an effective vessel cleaning protocol (see Chapter 18 of Reference 2) with emphasis on horizontal surfaces as well as common touch points (e.g. door handles, grab bars, frequently transited ladders).

- Where practicable, establish social distancing policies and procedures. Examples include:
    - Adjusting mealtimes to facilitate social distancing while eating
    - Shift galley operations away from self-service
    - Adjusting work schedules to enable proper distancing in laboratories
    - Wear masks while indoors
- Stock sufficient supplies for cleaning (see Annex C of Reference 2).
- Stock sufficient medical supplies onboard (see Reference 1 and Annex C of Reference 2).
- Display Coronavirus awareness and mitigation strategy posters throughout the vessel (see Annex A of Reference 2)

Self-isolation guidelines

These self-isolation guidelines will be used in the case of a participant/crew member whose cruise is more than 2 days offshore or if the participant/crew member must fly to the port of call. Testing is evolving and becoming more readily available in the community. We anticipate separate testing guidance to come out later as more information is collected and assessed by UNOLS in concert with the federal agencies and ship operators.

- Participant/crew member and family will self-isolate for at least 14 days prior to joining the vessel.
- If the participant/crew member must fly to join the vessel, the individual must self-isolate in the port of call.
- If an individual has already tested positive for IgG antibodies, the individual must send the test results to the Marine Superintendent and is free from any required self-isolation.

When Operations Moves Forward

Prior to traveling to the embarkation port

- Testing – Complete testing as outlined in the “Self-Isolation Guidelines” above.
- Pre-cruise Screening
    - Complete a screening of all personnel (crew and science party) per vessel’s established screening process (see Ship Operator Responsibilities above).
    - Require all personnel to provide a statement of their general health. This shall include affirmative statements as to whether they do or do not currently suffer from fever (above 100.4 deg F or 38 deg C), cough, sore throat, trouble breathing, fatigue, achiness, loss of smell or loss of taste.

Mitigation in Port

- Limit access to the ship. Restrict access to only those deemed essential. No public tours.

- Limit crew activities while in port to essential ones.
- Screen personnel who may need to come onboard and require them to wear masks while onboard.
- Set up hand washing station to be used prior to entering the ship's envelope – preferably before crossing the brow.
- Clean items coming onboard including supplies and provisions.
- Monitor and encourage established social distancing policies.
- Complete established daily cleaning routines.
- Require masks while indoors.

Mitigation at Sea

- Monitor and encourage established social distancing policies.
- Complete established daily cleaning routines.
- Record daily temperatures and monitor symptoms for crew and science party.
- Require masks while indoors.
- If all embarked personnel show no symptoms of infection after 14 days at sea, mitigation measures may be relaxed until the next event that exposes the ship to potential new infection (for example, boarding new personnel or port stops that involve interaction with personnel from outside the ship's population).

If Someone Gets Sick Onboard

- Follow CDC guidelines (see Reference 3) to the greatest degree that is practicable
- Contract GW-MFA per normal procedures for Academic Research Fleet vessels. Follow direction provided by GW-MFA medical personnel.
- If someone is diagnosed with coronavirus - go directly to port to avail affected personnel to proper supportive medical care.
- Ship's Captain shall report onboard coronavirus cases to the local USCG Captain of the Port in accordance with current USCG directives

Marine Superintendent & Ship's Captain Considerations for Going to Port

- What port will allow the ship to enter?
- What is the current situation regarding the status of the virus outbreak in the port?
- Is there sufficient appropriate care available in the port?
- Will the ship be quarantined in port? If so, does the port have appropriate services to support the ship's presence for 2 weeks or more?
    - What are port requirements/guidelines for quarantine of a vessel?
        - How long? Is it for 14 days? 14 days from last infected person?
        - Will personnel be quarantined?
            - On the ship or off the ship?
            - Is space even available?
    - If delayed in port – is there science gear/systems that need to be offloaded and shipped elsewhere?
    - If delayed in port, will the port support travelers arriving / departing from the vessel (i.e. crew changeouts, science party members returning to home, etc.)

- If the ship can depart port without quarantine in place orders
    - Can the ship still meet USCG requirements for proper number and type of licensed personnel with those remaining onboard?
    - Can the science party continue with fewer people?

Upon Arrival in Port

- Where is the ship to be moored? The ship shall be moored in a secure location where access to the ship can be controlled to essential personnel
- Will the ship be quarantined?

COVID-19 Risk Determination

After taking all the above into account the vessel operator and chief scientist shall complete independent risk assessments. This will be done to determine whether the risk of successfully completing the research cruise without experiencing a COVID-19 outbreak is at a low enough level (see risk levels below). Also, consideration will be given to whether there is a strong management plan to effectively address any case(s) that may arise during a cruise.

Risk shall be assessed as **Low, Medium** or **High** using the following criteria.

Low Risk

- Science operations are strictly local – within a two-day transit back to a US port.
- Local/state COVID-19 regulations/guidelines do not prohibit personnel working on the ship nor the cruise departing the dock.
- Local crew and science personnel have strictly adhered to local governmental self-isolation guidelines/regulations.
- Non-local personnel (crew and science party who have traveled by air to the port of call) have successfully self-isolated (see Self-isolation guidelines above).
- Science party has been reduced to the minimum necessary to carry out the work and ideally the vessel is not at full berthing capacity.
- Policies and procedures outlined in the *Preparing for Operations* section above are in place and strictly adhered to.

Cruises assessed a **Low Risk** may be conducted. The Marine Superintendent and Chief Scientist shall communicate to the operating institution, the NSF Ship Operations Program Manager, the NSF Science Program Manager (for NSF funded science), the ONR Program Manager for cruises on ONR-owned ships and also for ONR funded science, and the UNOLS Office of the **Low** risk assessment and subsequent decision to conduct the cruise.

Medium Risk

- Science operations are <5 days from a US port.
- Local/state COVID-19 regulations/guidelines do not prohibit personnel working on the ship nor the cruise departing the dock.
- Local crew and science personnel have strictly adhered to local governmental self-isolation guidelines/regulations.

- Non-local personnel (crew and science party who have traveled by air to the port of call) have successfully self-isolated (see Self-isolation guidelines above)
- Science party has been reduced to the minimum necessary to carry out the work and ideally the vessel is not at full berthing capacity.
- Policies and procedures outlined in *Preparing for Operations* above are in place and strictly adhered to.

Cruises assess as **Medium Risk** may be conducted if sufficient risk mitigation strategies are identified and implemented. The Marine Superintendent and Chief Scientist shall communicate to the operating institution, the NSF Ship Operations Program Manager, the NSF Science Program Manager (for NSF funded science), the ONR Program Manager for cruises on ONR-owned ships and also for ONR funded science, and the UNOLS Office of the **Medium** risk assessment and subsequent decision to conduct the cruise. Risk mitigation strategies shall be identified, reported to all appropriate parties, and implemented.

High Risk

A cruise will be deemed high-risk if any of the below bullets apply

- Science operations are >5 days from a US port or intend to stop at a non-US port
- Participating local personnel (crew and science party) have not strictly adhered to local governmental self-isolation guidelines/regulations.
- Non-local personnel (crew and science party who have traveled by air to the port of call) have not or cannot successfully self-isolated (see Self-isolation guidelines above).
- Policies and procedures outlined in *Preparing for Operations* have not been established or adhered to.

Cruises assessed as **High Risk** will not be conducted until there is more clear information about how the pandemic is progressing. The Marine Superintendent and Chief Scientist shall communicate to the operating institution, the NSF Ship Operations Program Manager, the NSF Science Program Manager (for NSF funded science), the ONR Program Manager for cruises on ONR-owned ships and also for ONR funded science, and the UNOLS Office of the **High** risk assessment and subsequent Postponement or cancelation decision.

Decision Making

After the Marine Superintendent and the Chief Scientist have taken into account the considerations and completed their separate risk assessments – they shall review their assessments together. They will make a final, joint determination. The Marine Superintendent and Chief Scientist shall then make a joint recommendation as to whether the science cruise should proceed. If the Marine Superintendent and the Chief Scientist cannot agree on a singular recommendation, each shall report their recommendation and the basis of it to the appropriate entities – as noted below for the different risk assessment and cruise execution determinations. In cases where assessments differ, operations will follow the more conservative of the two recommendations.

Canceling or Postponing a Cruise

If a decision results in the cancellation/postponement of a cruise, both PI and ship operator must:

- Document in writing why it is canceled. Submit to:
    - Chief Scientist / Marine Superintendent
    - UNOLS Office: doug@unols.org, alice@unols.org
    - NSF Ship Operations: rdufour@nsf.gov
    - NSF Science Program Manager – for NSF-funded science
    - ONR – for ONR vessels and ONR-funded science: robert.sparrock1@navy.mil
    - Other agencies/institutions that fund the cruise
- Document cost impacts resulting from the cancellation/postponement in accordance with the funding agencies grant guidance

Financial Considerations of Mitigation Measures

Financial impacts to the vessel operator, science party and crew (e.g. dayrates, supplements, overtime) should only be considered after risk assessment for the safety of crew and science personnel. In cases where operations are impacted, the Marine Superintendent and Science Party must

- Maintain appropriate records and cost documentation to substantiate the charge for any cancellation or other fees related to interruption of operations or services.
- To the maximum extent practicable, invoke or institute any and all reasonable mitigation actions and practices to lessen the cost to the Government during the crisis period. Such actions may be part of an existing program created by the grantee or may be created to respond to this crisis.

Federal agencies will provide separate guidance to Ship Operators and Principal Investigators related to financial issues related to postponement or cancellation of science cruises.