

COVID Mitigation Protocols Established for Safe JR Operations (COPE)

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Preface

This document defines protocols for operating the Research Vessel *JOIDES Resolution* (JR) as safely as possible during a time when the novel **Coronavirus Disease 2019** (COVID-19) is present globally and has the potential to cause illness, long-term health complications, and even death. The approach taken here is to mitigate pathways for COVID to get on the JR and, if it does get on the JR, to prevent or limit the spread while caring for those who have become ill. The protocols outlined here will be followed to the extent that is practical, and may have to be modified due constraints imposed by local authorities or logistical issues.

The protocols outlined in *COVID Mitigation Protocols Established for Safe JR Operations (COPE)* will be updated and revised continually as more is learned about COVID-19, as rules and regulations for travel are revised, as specific national port requirements are applied, as tests become more readily available and accurate, and as effective treatments and eventually vaccines become available. Until then, all of those involved in the many aspects of implementing a successful International Ocean Discovery Program (IODP) expedition will need to cope, which is “to deal effectively with a difficult situation.” There are no perfect solutions and there is no way to ensure that illnesses, COVID-19 or otherwise, never occur on the JR. We

therefore seek effective mitigation protocols for protecting the health of those who embark on the JR.

Acronyms and Definitions

CDC: Centers for Disease Control and Prevention (US)

COPE: COVID Mitigation Protocols Established for Safe JR Operations

COVID: Coronavirus Disease

COVID-19: Coronavirus Disease 2019

Cohorts: Groups of individuals who commonly work in close proximity on the ship

CSS: *JOIDES Resolution* Crew, JRSO Staff, and Scientists

EPM: Expedition Project Manager

IODP: International Ocean Discovery Program

JR: Research Vessel *JOIDES Resolution*

JRFB: *JOIDES Resolution* Facility Board

JRSO: *JOIDES Resolution* Science Operator

LO: JR Lab Officer

MLC: Marine Logistics Coordinator

PMO: Program Member Office

PPE: Personal Protective Equipment

SBSC: Shipboard Science Complement

Introduction

COPE is a plan for how to conduct IODP expeditions on the *JOIDES Resolution* as safely as possible once it is prudent to return to operations. Currently, the timing of when to move forward is still uncertain and depends on several factors, many of which are still in flux. The health and safety of all those who participate on IODP expeditions—the ship’s crew, the JRSO staff, and the scientists—is paramount in determining whether IODP operations can recommence. To conduct operations with low risks to crew, staff, and scientists, protocols for COVID-19 mitigation are described in this document for the following eight implementation stages.

1. Expedition planning, with an emphasis on shipboard preparedness, ports, and staffing
2. Recommended procedures to follow prior to departure for port
3. Protocols in port prior to moving onboard the JR
4. Protocols for port call activities
5. Shipboard mitigation measures
6. Dealing with a suspected COVID-19 case onboard
7. Protocols for medivacs or returning to port, in the event of a diagnosed case or development of serious symptoms onboard the JR
8. Ensuring safe return home

1. Expedition Planning

Well before the start of an expedition, the following steps will be taken to ensure the ship is prepared for dealing with COVID-19.

- 1.1. Port call determination: When the JRFB determines the expedition schedule, the JRSO select ports to maximize logistical efficiencies and operational days on site, which is accomplished by minimizing transit time during expeditions. Moving forward, ports (both scheduled and to be scheduled) will also be evaluated in the light of a number of COVID-19 factors, including the following:
 - 1.1.1 State of the pandemic in departing and arrival ports
 - 1.1.2 Travel restrictions
 - 1.1.3 Availability of COVID-19 testing in port
 - 1.1.4 Availability/willingness of port country to provide medical care if needed.
- 1.2. The ship will be stocked with sufficient supplies for infection mitigation and treatment, following guidance consistent with CDC latest information: <https://www.cdc.gov/coronavirus/2019-nCoV/guidance-hcp.html> and see Appendix I.
- 1.3. A reduced shipboard science complement (SBSC) and technical staff will be selected using the following criteria:
 - 1.3.1 The number of staff and scientists will be reduced to maximize social distancing onboard the JR, with the goal to have few or no JRSO staff or scientist cabins with more than one person in them.
 - 1.3.2 Only essential personnel required to accomplish the base objectives of the expedition will be allowed to sail.
 - 1.3.2.1 The JRSO EPM together with the expedition co-chief scientists will identify and rank positions of the science party that are essential to have onboard.
 - 1.3.2.2 The JRSO will make the determination on an expedition-by-expedition basis which support staff positions are required to sail.
- 1.4 For expeditions that have already had staffing completed, scientists who cannot sail will remain part of the primary science party as a shore-based complement with same rights and access to data and samples.
 - 1.4.1 For those expeditions not yet staffed, decisions will be made about what constitutes the SBSC and shore-based complement, preferably prior to initiating staffing.

2. Recommended Procedures to Follow Prior to Departure for Port

- 2.1 The JRSO medical exam includes a new COVID-19 Risk Assessment form.

- 2.1.1 The COVID-19 risk assessment asks the [participant's, or when needed, the ship's] physician to determine if the combined known health conditions put the person being examined at a potentially high risk of developing a severe illness from COVID-19.
- 2.1.2 The ship's doctors will evaluate the physicians' assessments to determine if the shipboard medical facilities/capabilities can support care for those individuals deemed to be in a higher risk category.
 - 2.1.2.1 Those scientists deemed at high risk have the option to become part of the science party as a shore-based member (see "Shipboard Science Complement").
 - 2.1.2.2 Those scientists deemed not to be at high risk must sign a Waiver/Consent form acknowledging that they understand the risk factors, particularly the risks related to their own medical conditions and history, and agree to participate on the JR.
- 2.2 Shipboard participants will shelter at home for 14 days prior to departure for port.
 - 2.2.1 Sheltering at home means stay at home, leaving only for essential services (e.g., food, healthcare). Avoid people outside your household, and maintain safe practices (e.g., handwashing with soap and water, clean and disinfect frequently touched surfaces). When outside your household, maintain a distance of 2 m (6 ft) and limit time of exposure to others. Wear a face covering when around others outside your household, especially indoors where social distancing alone does not protect you from infection.
- 2.3 A COVID-19 RT-PCR test is strongly recommended prior to departure for port. This will help identify infected individuals before they expose others during travel and help avoid that person learning only after they arrive in port that they will not be allowed to sail.
 - 2.3.1 Currently, test availability and turnaround time for results vary widely, and so CSS should seek local testing facilities to obtain the result prior to departure from home.
 - 2.3.2 JRSO staff will be tested, if tests are available, with costs covered by the JRSO.
 - 2.3.3 Scientists and crew should seek to be tested. Costs for scientists are dependent on their respective Program Member Office (PMO) policy.
- 2.4 All CSS are required to also complete the online Siem screening questionnaire ([Siem Form FO-619](#)) one to five days prior to departure.
 - 2.4.1 Anyone who tests positive or is determined to be a suspected COVID-19 case based on the Siem questionnaire shall not depart for port.
 - 2.4.1.1 Individuals who test positive should notify the following so replacements can be sought, if required:
 - 2.4.1.1.1 Scientists should immediately notify their EPM.

2.4.1.1.2 JRSO staff should immediately notify their supervisor.

2.4.1.1.3 Siem staff should immediately notify ODL Crewing Manager.

2.5 Before leaving for the airport, be prepared to fly safely by following CDC guidelines for travelers (see <https://www.cdc.gov/coronavirus/2019-ncov/travelers/index.html>).

3. Protocols in Port Prior to moving Onboard the JR

3.1 The JRSO Marine Logistics Coordinator (MLC) will be the only non-sailing staff member to attend the port from the JRSO. The MLC will work with the Operations Superintendent, who will have authority for decisions that need to be made in port. The Operations Superintendent will in turn consult management on shore and the shipboard Lab Officer and EPM as needed.

3.2 Transportation from the airport to hotel will be obtained at the airport by the traveler, as done in the past.

3.2.1 The traveler should, however, seek transportation that allows as much social distancing as possible.

3.3 Upon arriving at the hotel:

3.3.1 If necessary and if permitted by local immigration rules, CSS may purchase critical personal items from local stores up until testing begins, which should be within 24 hours of arrival. **However, this should be avoided by planning and packing accordingly.** Social distancing, masking, and other COVID-19 precautions should be maintained.

3.3.2 As soon as possible, begin a period of self-isolation in the hotel room.

3.3.2.1 Do not leave the hotel room and have no personal contact with others except medical personnel conducting testing.

3.3.2.2 The selected hotel will have in-room service for meals.

3.3.2.3 All CSS should have a plan for in-room entertainment, exercise, additional preferred amenities (e.g., snacks, etc.), and social support.

3.4 Prearranged COVID-19 RT-PCR tests will be done twice for all CSS before they are allowed to board the ship. Duplicate tests improve the odds of catching false negatives, ensure that even those who were not able to get tested prior to their flights are tested quickly upon arrival at port, and test later to catch cases that may have been acquired too recently for the first test to detect. Currently, too little is known about the accuracy of antibody tests or about the ability of antibodies to prevent future re-infection, to rely on these types of tests for screening purposes.

3.4.1 The first test will take place as soon as practical after arrival, and the next test will take place two days later. Assuming that test results may take up to 48 hours, this will require that all CSS are [isolated] in the hotel for 5 days.

- 3.4.1.1 Flights will be arranged to attempt to have all CSS arrive the same day at the hotel, which will allow testing to be set up for everyone the following day.
- 3.4.2 A second test will be taken 48 hours after the first, by which time the results of the first test should be known.
- 3.4.3 If either test is positive, contact your supervisor immediately. The ODL Commercial Operations Manager and JRSO MLC to make alternative arrangements for the individual. The Ship's Captain and the JRSO Operations Superintendent will be informed and assist as necessary.
 - 3.4.3.1 Housing arrangements will need to be made for the individual, who may not be able to return home until local health authorities clear them to do so.
 - 3.4.3.2 Costs for hotel and per diem for JRSO staff will be covered based on the travel policy.
 - 3.4.3.3 Scientists expenses fall under their respective PMO policy.
 - 3.4.3.4 Any medical care required for scientists or JRSO staff is to be covered by the individual's insurance.
 - 3.4.3.5 Cost for housing, and meals for the crew is covered by Siem (to be reimbursed by JRSO). Medical care, if needed, for the crew is covered by Siem.
- 3.5 During the time in the hotel:
 - 3.5.1 All CSS should continually monitor themselves for COVID-19 symptoms and inform their supervisor if a potential COVID-19 infection is suspected.
 - 3.5.2 Expedition preparation should be conducted.
 - 3.5.2.1 Scientists can use Zoom to start preparation activities and training with JRSO staff.
 - 3.5.2.2 JRSO staff and crew conduct crossover remotely (Zoom or phone).
 - 3.5.2.3 CSS should begin adjusting to their assigned work schedule because everyone should be prepared to go on shift when they get to the ship.
 - 3.5.2.4 JRSO staff and scientists will be assigned to cohort groups by the EPM and LO. As much as possible, cohorts move as a group during transport to the vessel and once onboard. This will include assigned times to eat in the galley and attend safety drills.

4. Port Calls

- 4.1 Off-going CSS will depart the vessel prior to the oncoming CSS arriving, except for essential personnel for which in-person crossovers are required.
- 4.2 Where practicable, all sailing personnel board on the same day.

- 4.2.1 The departing crew will disinfect high touch surfaces prior to departure.
 - 4.2.2 Oncoming personnel will be brought to the ship in isolated cohort groups. This will likely require multiple bus trips from the hotel to the ship.
 - 4.2.3 The shipboard complement will move onboard in cohort groups after being screened on the dock. Screening requires that all CSS complete Siem form FO-630, which asks the individual if they are experiencing COVID-19 symptoms and requires that the individual's temperature be taken. If the individual has no symptoms and a normal body temperature, they may board the ship. If not, then the individual returns to the hotel for two days to see if symptoms resolve, and possibly test again for COVID-19.
- 4.3 Cohorts will immediately move on shifts to maximize social distancing in common areas.
- 4.4 Once on board, all personnel are restricted to the vessel, with the exception of those who must work on the dock.
- 4.4.1 Special ID or badges will be provided to staff who are working on the dock.
- 4.5 Minimize interactions of staff with port personnel.
- 4.6 Gangway security and safety measures include the following:
- 4.6.1 Only shipboard personnel can come onboard (with exception of vendors as required by Siem Offshore or the JRSO and the normal required government officials and technical personnel associated with vessel coming in and out of port) and only authorized personnel can leave the vessel.
 - 4.6.2 A sanitization station is available on the gangway with extra masks, work gloves, hand sanitizer, and disposal bin.
 - 4.6.3 Any staff going from the vessel to the dock must wear masks and eyewear.
 - 4.6.4 Work gloves used to handle freight must be removed and left at the gangway and at the end of the day sent to the laundry.
 - 4.6.5 Staff returning from the dock must sanitize their hands and discard their masks.
- 4.7 Freight from containers should not be de-stuffed by local stevedores but off-loaded at the ship with ship's crew if possible; otherwise treat as local freight. *The contents of oversea container shipments should be safe to handle given the time in transit.*
- 4.8 Local freight/purchases should be sanitized as follows:
- 4.8.1 At an outside location, disinfect all exterior packaging, remove, bag, and discard by staff in full PPE and disposable coveralls.
 - 4.8.2 Disinfect interior packing as necessary.
 - 4.8.3 Dispose of coverall masks and gloves with the packing material.
 - 4.8.4 Do not bring work gloves onboard the ship. Place work gloves in laundry bag at gangway.

4.8.5 Sanitize hands.

4.9 Shipping paperwork handled by locals should be photographed (using phones) and discarded.

4.10 In the event that mission-critical personnel (e.g. Captain, doctor, driller) are not allowed to board the vessel due to these protocols, the expedition may be delayed while replacement(s) are found. In such a situation an expedited testing protocol (such as requiring a single test) may be employed to clear the new individual(s) for sailing.

5. Shipboard Mitigation Period

This period begins after the last contact with shore personnel, which will typically be when the harbor pilot disembarks after guiding the ship out of port, and extends through the next 14 days of the expedition, assuming there are no suspected COVID-19 cases identified during that time. The goal of the mitigation period is to enhance social distancing and reduce the potential of exposure to COVID-19 by having staff take the following steps.

5.1 Be ready to work assigned shifts upon boarding the ship, a process that should have started while in the hotel.

5.2 Work in small cohort groups.

5.2.1 Assign single-user instruments/computers/microscopes, as practical.

5.3 Do not mingle with/in other cohort groups.

5.4 Wear masks in indoor laboratories and common areas, including passageways.

5.5 Disinfect work areas and high-use touch surfaces.

5.6 Where practicable, galley use will be regulated as follows:

5.6.1 Galley access will be scheduled by cohort groups.

5.6.2 Galley scheduling will be used to minimize the number people in galley at a time.

5.6.3 This number should be small enough to allow diners to socially distance as much as possible.

5.6.4 No or only limited self-serve items will be available.

5.6.5 Enhanced barriers will be used between the food-serving line and diners.

5.7 Access to some common areas may be prohibited or limited. These include the following:

5.7.1 Conference room, which will preferably be limited to 10 or fewer individuals.

5.7.2 Gym, movie room, and lounges may be scheduled by small cohort groups, or access may need to be totally prohibited.

5.8 Safety drills will be staggered into cohort groups.

5.9 Shift crossovers:

- 5.9.1 CSS will ensure their cabin is vacant during scheduled times to allow Entier staff to clean and replace linens.
- 5.9.2 Those sharing a common room will leave their rooms before their shift starts and not return to their room until after their shift to minimize contact between roommates.
- 5.9.3 Where practicable, exchange of information during crossovers between cohort groups should be done remotely, and when not possible, social distance as much as possible and wear masks.

6. Dealing with a Suspected COVID-19 Case Onboard

Everyone onboard will follow Siem Offshore's procedures:

- 6.1 Predefined isolation cabins or other rooms (at the Master's discretion) will be available for housing suspected cases of COVID-19.
 - 6.1.1 For each expedition, the ship's doctor, Captain, and JRSO LO will develop a plan to redistribute personnel to make isolation rooms available, if needed. Redistribution that results in double occupation of rooms should be with personnel on opposite shifts.
 - 6.1.2 All designated isolation cabins should have a hand sanitizer dispenser and designated lined disposal bin with cover outside the door.
- 6.2 If it is determined that there is a suspected case of COVID-19 onboard, isolate the patient immediately in a predefined isolation cabin with the door closed and implement the following measures:
 - 6.2.1 Instruct the patient to wear a mask and regularly wash hands with soap and water and use alcohol-based hand rub.
 - 6.2.2 Make sure all persons entering the isolation room wear proper PPE and perform hand hygiene using the hand sanitizer outside the room after removal of PPE.
 - 6.2.3 Perform hand hygiene following all contact with ill person's immediate environment.
 - 6.2.4 PPE used by care-provider should be disposed in a designated double-lined bin with cover outside the isolation cabin. Do not re-use. Tissues, masks, and other waste generated by ill persons or in the care of ill persons should be placed in a double-lined container in the ill person's room and treated as biological waste and incinerated.
 - 6.2.5 Limit the number of persons entering the isolation room to Medic or Medical Person-in-Charge or two other crewmembers (AM/PM shifts), in charge of cleaning the cabin and/or delivering food. They should use proper PPE when entering the patients' cabin. Ideally, assign one who is in good health without risk conditions. Visitors are not allowed.

- 6.2.6 If patient is strong enough, their food tray can be placed in front of their door cabin on a table for him to pick up. This way, the crew member delivering food need not wear PPE.
 - 6.2.7 Food to the patient can be served using single-use utensils and disposed of and incinerated afterward.
 - 6.2.8 Master shall consider implementing more frequent cleaning and sanitizing regime than usual (disinfecting tables/handrails/door knobs consoles, etc.).
 - 6.2.9 Limit the movement and transport of the patient from the isolation room for essential purposes only. If transport is necessary, the patient should wear a medical mask and any surfaces touched by the patient should be cleaned and disinfected.
- 6.3 Individuals who had close contact with the symptomatic person should be notified and closely monitor themselves for possible onset of symptoms and isolate as necessary.
- 6.3.1 Contact tracing will be used to identify members of the symptomatic person's cohort or other individuals that they came into close contact recently.
 - 6.3.1.1 These individuals may need to isolate.
- 6.4 Suspected cases shall be reported to the JR's Vessel Manager, Crewing Manager, and the JRSO.

7. Medivac or Return to Port

- 7.1 In the event that shore-based medical treatment is needed for a diagnosed case of COVID-19 onboard, the Master should report the event as soon as possible to the next port of call, to allow the competent authority at the port to arrange, depending on the situation, medical evacuation or special arrangements for disembarkation and hospitalization of the patient and laboratory diagnosis.
 - 7.1.1 The ship may be asked to proceed to another port in close proximity if this capacity is not available, or if warranted by the critical medical status of the suspect case of COVID-19.
- 7.2 Disembarkation of the patient should take place in a controlled way to avoid any contact with other persons on board the ship, and the patient should wear a medical mask.
- 7.3 Personnel escorting the patient during the medical evacuation should wear suitable PPE. All equipment used for transporting the patient must be cleaned and disinfected after use or disposed of if relevant.
- 7.4 As soon as the patient has been removed from the ship, the cabin or quarters where the suspected case of COVID-19 was isolated and managed should be thoroughly cleaned and disinfected.

- 7.5 If the vessel has limited PPE supplies, the cabin shall be quarantined and access forbidden. The Master shall seek advice from port health authority with regard to cleaning, as special local regulations may be imposed.
- 7.6 The port health authority will most likely conduct a risk assessment and all contacts of the suspect case will try to be identified. Participants and crew shall follow the instructions of the public health authorities until the laboratory results of the suspect case are available. If the laboratory examination of the suspect case is positive for COVID-19, then all close contacts are likely to be quarantined for 14 days according to instructions from the competent authorities.

8. Ensuring a Safe Return Home

- 8.1 Travel itineraries home should be arranged to minimize time in the port city to reduce the risk of being exposed to COVID-19 while in port.
- 8.1.1 When possible, disembarking CSS should travel directly from the ship to the airport for returning home.
- 8.2 Extended stays in port or travel other than to an individual's home base will be considered personal travel, for which the traveler is responsible.
- 8.3 Upon returning home from an expedition, all CSS must be prepared to follow local laws, guidance, or employer requirements on self-isolating/quarantining.

References

The protocols defined here are based on best-practices employed by the US Academic Research Fleet (UNOLS) and a number of international research ship operators. The UNOLS protocols are based on guidance from the following references:

- a. George Washington Medical Faculty Associates (GW MFA) recommended list: <https://www.unols.org/news/ships-news/unols-update-coronavirus-covid-19-and-considerations-scientists-and-operators>.
- b. 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](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)
- c. Centers for Disease Control (CDC) Maritime Recommendations: <https://www.cdc.gov/quarantine/maritime/recommendations-for-ships.html>
- d. CDC COVID-19 Travel Recommendations by Country: <https://www.cdc.gov/coronavirus/2019-ncov/travelers/map-and-travel-notice.html>
- e. Discovery Health - COVID-19 ONBOARD PROCEDURES: <https://discoveryhealthmd.com/wp-content/uploads/2020/05/COVID19-Onboard-Procedures-v1.13.pdf>

- f. Operational considerations of managing COVID-19 cases or outbreaks on board ships, World Health Organization,
<https://www.who.int/publications/i/item/operational-considerations-for-managing-covid-19-cases-outbreak-on-board-ships>

Appendix I

Siem Offshore list of COVID-19 supplies available aboard ship

1. Wondfo SARS-CoV-2 Antibody Test Kits 3 boxes of 20
2. Non-Contact IR Thermometer (3)
3. Fingertip Pulse Oximeter (2)
4. Disposable Protective Chemical Coveralls-300
5. Nitrile Gloves, 50 boxes of 100, and Vinyl Gloves, 6 boxes of 100
6. KN 95 Masks, 1200 pcs, and Surgical Face Masks, 30 boxes of 50
7. Booties, 50 pairs
8. Antibacterial Surface Cleaner (1 Gallon) with Chemical Spray, 4 Bottles
9. Industrial Wipes with 70% Ethanol, 8 cans of 90 wipes/can
10. Face Shields (25) and Goggles (60)
11. Alcohol Gel 500 mL/bottle (78)