

Irminger Sea: Oct 10 - Morse Pond School

Questions from the students at Morse Pond School (below, in bold)
Note from Chief Scientist Bob Pickart

Dear Ms. Keoughan/Terra's Students,

Thank you for your great questions. I asked the Captain if he would answer the ones about the ship and the crew, and I answered the ones about the science. Our science party is really lucky to be sailing with a crew who are both talented and nice. I'm sure you'll notice this in the answers that the captain provides below. Thanks again for following along with us, and don't hesitate to ask more questions!

Regards, Bob

Answers from Captain Kent Sheasley

1. How do you sleep?

In the worst weather, a lot, maybe most, people aren't able to sleep very well. Most crew get used to the motion up to a certain point, but one of the problems with very rough weather is how tired and worn everyone gets from not being able to sleep. Depending on how the ship is moving, based on what direction the waves are affecting the ship, some cabins (bedrooms) move more than others. The higher up on the ship that the cabin is, generally the more motion you feel. The Captain and Chief Scientist cabins happen to be the highest cabins, which is not too much fun in bad weather.

2. Is it hard to steer the Knorr in the large waves?

It takes a lot of power to move and control the ship. As the wind and waves get stronger, it uses up a lot of that power just to control the ship, let alone make it move well through the water. When the wind and waves get as big as some of the pictures on the web page show, it takes most of the ship's power just to keep the bow (front) pointing in a safe direction, which is into the wind and large waves. If we let the ship get sideways to the wind and very large waves, it takes almost all of our power to get her pointed in a direction that we want, because of all that strength of wind and water working against us. We also don't want to get sideways to the wind and waves because it is about the worst ride you could imagine.

3. Is it frustrating and confusing trying to do research in this weather?

It certainly is frustrating at times. There are a lot of stations (locations) that we want to get to, to take samples and get information for the scientists to take home with them. When the weather gets really bad, we aren't able to do much safely, and if we can't do it safely we don't do it. Each trip only has so much time, and we really want to use that time getting as much information as we can. When we are stuck riding out weather, we are not accomplishing what we want to. Once in a great while, there are strange folks (such as some of Dr. Bob's associates) that actually WANT to be in rough weather, but I personally don't understand that! I am joking, of course, but sometimes we do in fact NEED to be in some bad weather. Doing science is not always fun or easy (and yes, occasionally frustrating), but it is hopefully rewarding more so.

4. What do you do for recreation?

There are several different hobbies that crew members have to pass the time when they aren't working or sleeping. Almost all of the crew members read a lot of books and exercise in the gym. A lot of us watch a movie together every evening (those people not on duty that is), and some play card games. Occasionally someone does some traditional crafts such as sewing (a big hit with those of us on board that need clothes mended), and we have even had some folks that enjoyed painting and drawing. I personally am very interested in airplanes and flying, so when I can, I study about being a pilot.

5. How many jobs are there to run the Knorr? Besides the captain, what are they?

There are 24 crew members that "run" the Knorr. This does not include the necessary Scientists and Technicians to accomplish the science goals of any particular voyage. As Dallas Murphy wrote about (Daily Journal- Oct. 8, Bridges and Galleys) the crew members are divided into departments on the ship, except for the Captain. The Departments are Deck, Engineering, Steward, SSSG (Shipboard Science Support Group- or Science Technicians). I know that Mr. Murphy has plans to cover some of these departments, and their work areas, in a little more detail in future journal pages, but I'll try to give you a quick rundown.

Before trying to describe the different jobs, I want to mention a couple of jobs that everyone has in common on the ship. Every crew member is trained in basic seamanship, emergency response, firefighting, lifesaving, and survival skills. Because we can not dial 911 when things go wrong, we all have to be ready to take care of emergencies together as a team, no matter what department someone works in. We work very hard to prevent problems, stay safe, and practice that training during drills, all to prevent having to use the training for real.

The Deck Department (called "Deckies"), run by the Chief Mate, is responsible for the navigation, operations, cargo, rigging, and maintenance of the ship (other than the engine room and galley). There are 3 Deck Officers (called Mates), including Chief Mate, 2nd Mate, and 3rd Mate. They each stand 8 hours of watch (duty shift) on the bridge in control of the ship's movement and operations during that shift. They also each have additional responsibilities besides their bridge watch. The Chief Mate is the head of the department, and oversees everyone else in the deck department as well as a lot of paperwork and reports that goes along with it. The Chief Mate is also the "Medic" (with help from Doctors ashore that we can call by satellite phone) if anyone needs medical attention. The 2nd Mate is the ship's navigator, and uses the Chief Scientists' plan to organize where the ship will go (and what path we take) to do our science stations. The 2nd Mate also maintains all of the navigation equipment (books, instruments, tools) that are on the bridge. The 3rd Mate is the safety

officer, and takes care of all the firefighting equipment, and lifesaving equipment including life-jackets, survival suits, life-rafts, and our rescue boat.

There are 6 crew members in the Deck Department besides the Mates. The Bosun is the senior crewmen, and directs the others in deck operations, maintenance, rigging, running the cranes- you name it. As Dallas Murphy noted, the Bosun is the jack-of-all-trades on deck, and directs the other crew members in running the cranes and winches used to deploy science equipment. The other 5 crew members are either AB's (Able bodied seamen) or OS's (Ordinary seamen). Those 5 divide their time between standing watches on the bridge with the Mates, or working "on deck" for the Bosun. So that makes 9 "Deckies" total in the Deck Department.

The Engine Department is run by the Chief Engineer and has 8 people in it (including the Chief). They take care of all the machinery, electricity, fuel, making water, and anything else that we need to have power, lights and water on the ship and keep the ship working. Though the Deck Dept. runs the cranes and winches, the Engineers are the ones that keep them running and fix them if needed. Besides the Chief, there are 3 Engineering Officers, and 3 "Oilers" that each stand 8 hours of watch in the engine room (just like the mates and AB's on the bridge- there are always 2 people on watch in the engine room, 1 Engineer and 1 Oiler). The last, but not least member of the Engine Dept is the Electrician. This ship has ALOT of electrical power, running just about everything from the lights and pumps to the propellers, so you can imagine that the Electrician is always busy and has alot of things to take care of.

The Stewards Department are the folks that run the galley and keep us fed. There are only 3 of them making meals for sometimes 50+ people that may be aboard. The Steward runs the Department, and besides taking turns making meals with the Cook, makes sure we have plenty of food and "hotel" supplies before going to sea. These "hotel" supplies include toilet paper, cleaning supplies, bed linens, soap, laundry detergent, and more. One of the most important jobs on the ship is the third member of the Stewards Dept, and that's the Mess Attendant. The MA keeps the Mess Deck in order, stocked, and cleaned- as well as helping the Steward and Cook prepare meals. With sometimes 50 people coming and going, getting coffee and tea, having meals and snacks- the Mess Attendant can not relax very much.

The 3 folks we haven't mentioned yet are the 2 SSSG techs (Shipboard Science Support Group), and the CommET (Communications and Electronics Technician). They are the ones that keep all the navigation/communication/science electronics and systems that are permanently on the ship in good working order (so the Mates and others can do their job using them). Though the ship was built almost 40 years ago, she has alot of new equipment that changes all the time as fancier things get made. ALOT of these electronics and systems are very complicated, and keeping them working and ready for use takes alot of work and care.

So, Again, all together there are 24 crew members, and it takes each and every one of them to do their job and their part.

Captain
Chief Mate, Second Mate, Third Mate
Bosun
3 Able Bodied Seamen
2 Ordinary Seamen
Chief Engineer
1st, 2nd, and 3rd Engineers
Electrician
3 Oilers
Steward, Cook, and Mess Attendant
CommET (Communications and Electronics Technician)
2 SSSG Techs (Shipboard Science Support Group)

6. How heavy is the Knorr?

Currently, the Knorr (with all the equipment, people, food, fuel, etc.) weighs 2,944 long tons. There are 2,240 pounds in a "long" ton, which is different than a standard ton (which is 2,000 pounds). So, currently the ship's total weight is 6,594,560 pounds. We once answered this question before, and we compared that weight to elephants. An average full-grown elephant weighs 6 tons, so the weight of the ship and equipment is about the same as 550 elephants. This is an interesting question to answer. Every time the ship is loaded, I have to figure out alot of things regarding weights. It is very very important to know where, and how much, these weights are and how they will be used. It is all part of knowing the "Stability" of the ship, and how she will handle being at sea (as well as if she is safe to go to sea). When we are in the weather that you see on the web site photos, it is really important to know how stable the ship is, and how she will ride in that weather. It's not just the size (length, width, and height) of a ship that determines how she will ride, but also where you put all the weight that you bring aboard.

7. How fast can the Knorr go?

The Knorr's normal cruising speed is about 12 Knots (nautical miles per hour). We talked about using power in rough weather, and how much power it takes to fight that weather. The same thing applies to the normal speed. It depends on currents that we are fighting (sometimes they help us too), and wind. During most of the last storm, the fastest we could probably do is about 9 knots. If we have a really bad emergency, we could go a little faster, maybe up to 14 knots, if we absolutely had to. We don't like to do that because it is very bad for the machinery and thrusters (propellers), and uses alot more fuel. Most ships are designed for some particular purpose. Container ships, for example, are designed to hold alot of boxes of cargo and go really fast from one place to another, commonly at about 20+ knots. That is certainly much faster than we could ever move. However, they wouldn't be able to do the kind of science equipment work that we

do, because they are not very maneuverable, and they do not have the endurance that we have. It takes a lot of fuel and very big engines to go as fast as a lot of container ships do. Besides that, you would have a very hard time reaching the water from their deck to put things in or take them out of the water. Research ships are a bit slower by comparison, but they are very maneuverable, can stay at sea for longer periods of time, and can launch and recover instruments and equipment that container ships would not be able to. Basically a ship is generally either fast or she's maneuverable, it is very hard to design a ship that is both.

8. How does it feel to be on the ship that found the Titanic?

I am very proud to be on this ship in general. The Titanic history is one of the great (and popular) things that this ship has done in her career. As Dallas Murphy mentioned, that is just one of the many things that she has done in almost 40 years of taking scientists and engineers to sea. I often think that I feel privileged to be part of the history of a ship and crew that has supported many science discoveries long before I was even old enough to work on her (actually, as long as I have been alive), and has been to all the farthest reaches of the earth's oceans. In 14 years being a part of this ship, I can say I continue to be excited about where we go, and what the scientists find out from their work, and the very talented people (Scientist, Engineers, and Crew) that I get to work with on her.

Answers from Chief Scientist Bob Pickart

1. How many moorings are you picking up and how far is it from the first to the last?

Last fall we sailed on an Icelandic ship and deployed 8 moorings, all but one of them close to Greenland. I knew at the time that this was risky because of three reasons: (1) there are icebergs in the area which can knock down a mooring; (2) there is a lot of commercial fishing nearby and a bottom trawler could easily destroy a mooring; and (3) the currents are so strong here that they could hurt the moorings. So I had three strikes against me. The good news is that we got all of the moorings back, and there was no evidence of iceberg activity or fishing. However, now that we have the instruments back we have discovered that the currents were so strong that they constantly bent the moorings over. This caused some of the moorings to stop working. To put it bluntly, my moorings took a beating! However, we did get enough information to learn some great things about how the ocean works in this region.

2. How deep is the deepest part of the Irminger Sea you will sail over?

By open ocean standards most of our cruise will take place in relatively shallow water. The deepest depths that the Knorr will go into are about 2,000 meters (1.2 miles). But here's an interesting tidbit: the East Greenland shelf has lots of deep canyons in it that are associated with fjords. Yesterday we took some measurements only two miles offshore of one of those fjords, and the water was 500 meters deep. This is 10 times deeper than the water way to the south of Martha's Vineyard!

3. How cold is the water?

The temperature of the water in the Irminger Sea varies quite a lot from one region to the other. Usually you think that the deeper you go the colder the water will be, right? Well consider the following. The surface water that we measured at the fjord yesterday was about 1.2 degrees Celsius (34 degrees Fahrenheit), while the water we sampled today at 100 meters was warmer than 8 degrees Celsius (46 degrees Fahrenheit)! Why is this? The water exiting the fjord was melt water from the glacier, while the deep water we measured far offshore actually came from the warm Gulf Stream!

4. How strong is the current?

As I described above, the currents are so strong that they damaged some of my moorings. However, they aren't nearly as fast as the tidal currents you see in Woods Hole. On the other hand, the AMOUNT of water that is moving in these deep water currents is awfully impressive. How does 10 million cubic meters of water per second sound? Can you figure out how much water flows through Woods Hole by comparison?

5. What is something you've learned about the Irminger Sea on the cruise?

We experienced something neat early on in the cruise. One of the things I'm trying to learn about is how the ocean in this region responds to the frequent storms in fall and winter. This was part of the reason why I put the moorings in--to measure the currents during the storms. Right after we got the moorings back we got hit by the very same type of storm, so I got to see first hand how powerful they are and how much they can transform the ocean. All I can say is, one storm was enough for me!

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