Plymouth, 5/12/2017

I: Interviewer (Gregor Halfmann)

R: Respondent (Lance Gregory)

I: From the job description on the SAHFOS website, it seems that you have these two areas, the instrumentation and logistics part and …

R: I look after the workshop and operations.

I: Okay. And you are coordinating the relationships with the shipping companies, right?

R: Yeah, for operations we are talking about the logistics and ensuring the cooperation with the …

I: So it is actually not that separated …

R: No, it's not. It is all one thing.

I: Okay, so has this been your job here at SAHFOS for a long time or what have you been doing?

R: I have been employed by SAHFOS for twenty years. I started off as a technician and the structure of the company was different. I have progressed, if you like, through the organisation and now I look after the operations and the workshop.

I: How was the structure different?

R: We had an operations manager, who looked after the ship-[unclear] side and we had myself and my colleague in the workshop. And the survey recruited another technician. At that point I became the overseer of the workshop. The operations manager left. I knew his job inside out and therefore I took that on because there was no regular replacement. So [unclear] we recruited a ship liaison officer who helps me look after that side of the business.

I: Okay. And before you came here you said you were in the Air Force?

R: I was in the Air Force. I was an engineer in the Air Force. And one of my first tasks … I used to go to sea with the Air Force on rescuing target towing [unclear]. So when they were looking for an engineering technician with sea-going experience — and that's towed at sea — I was able to acquire a good CV and I was successful.

I: How did the experience that you gained there help you in the job here? I mean, of course you are a technician, but are there any particular things …

R: The engineering side is … you need to have a broad-based engineering background to do the workshop. But probably what you are more interested in is how we interact and enthuse and maintain the volunteer network. And that is all down to people skills and a little bit of grey hair helps when you speak to people, because you have a little bit of … a sense of maturity, you know. I have also worked in the voluntary sector alongside my employment at SAHFOS. At one time I was looking after probably a hundred and fifty volunteers working in Plymouth on nothing at all related to science, but that taught me a lot about how you … It was important to constantly feed back, so people see their worth. How important it is to … enthusiasm is infectious, so if it is not important to me why should it be important to anybody else? Momentum, so if somebody asks you a question you need to act promptly, because again, that is another way of keeping the enthusiasm going. And talking to people with respect, understanding the demands on their time and how they can fit what you want them to do alongside.

I: I see. I wanted to ask what part of your job is the more dominant one or how you divide your time. But maybe I'd rather ask what your daily routines are or what a typical day of work looks like?

R: That is one of the reasons I stayed here for twenty years, because even though you think running the CPR Survey is much of the same … There is so much variation, to be honest. Some days you come in here and you just … I am saying the word “just”, it is not “just”, but you are setting up CPRs, you are boxing them up, you are labelling up for the ships. Other times we are dealing with the media, which is quite good fun. We had the BBC down here and we had other film crews and radio crews down here. This is the workshop, but you would be surprised how many visitors we get. We had all the local MPs around, so you get to talk to people that way. Over the years I found myself on the back of an oil tanker off Alaska. I have had a [unclear] coming out of Israel, port-side visits to Liverpool, Immingham, Portsmouth, yeah … And then of course another part that we do, because the CPR is going global, if you like. This little group here supports a lot of sister surveys in places like New Zealand, Japan, Tasmania, Brisbane, the list is growing all the time, South Africa. So we run training courses for them, we supply equipment to them, supply the filtering silks to them, and alongside that we got our own fleet of about fifteen ships of opportunity that are towing for us at any one time. Dave Wilson is the ships liaison officer. He works in the mornings only, he would be the first line of call. But invariably, we work well together. We bounce ideas off each other, it's “Lance, what do you think of this?” or “Dave, if it's me, I would say this”. We have that in-built check and balance before we fire anything back off to the ships. So there is a lot going on to keep the survey going.

I: You mentioned your colleague. What does your team look like here for the operations?

R: It is just changing as we speak, because I don't know if you are aware that SAHFOS is re-structured and has just gone through a redundancy phase?

I: Yeah, I have heard …

R: Yeah, so what we have for the medium term, I suggest, going forward in the operations team, that would be myself, our part-time ships liaison officer, a full-time marine engineering technician, a chief filtering silk producer, and then we also have Claire Taylor, and another person who is going to spend more time producing silk. You will be surprised how much silk we produce in a year. A few years back we got through 1,400 square metres of silk in a single year.

I: These are the silk rolls, right?

R: Yeah, in various stages of production.

I: Okay, I've got to take a look at that later. Is this where the silk is prepared?

R: It is, yeah.

I: Okay, I'm looking forward to that. Can you one more time, maybe in your own words describe what your main tasks are, your duties or responsibilities?

R: My responsibilities are to make sure that SAHFOS has a volunteer fleet that will tow for us, that anything we send to that ship will be compliant, safe, and legal, that each ship will be supported by a volunteer network at that port, by the port-handlers, and I'll show you in the presentation in a little bit why that is so important. We make sure that all the sister surveys are serviced and that any equipment that leaves this door is set up correctly, fit for purpose, and helps us keep our 90% success rate, which we are quite proud of.

I: Yeah, so maybe you can show me the presentation that you have.

R: Yeah, let's do it. … You understand that SAHFOS is … the day-to-day manager is our Director and then we are overseen by a council of peers who are split into two. We have the Board of Trustees, that are usually representatives of organisations and funders, and then we have what we call the Science Advisory Board, who are eminent scientists across the globe who have an interest in what we do. The Director asked me to put a presentation together on what I coined the final five hundred of the phase, because people see us … When you came in you saw the yellow boxes?

I: Yeah.

R: If the ship operates from the UK or … being exported from the UK, all the equipment gets loaded up there and send, so people see it being put on the back of a Tuffnells lorry or TNT lorry and off it goes, which is great until it gets to the port. And if you go to these big terminals, the big container ports, it is amazing that our yellow box gets moved free of charge from the security gate to arrive at the right ship at the right time and vice versa. So if I put the right presentation up for you … Okay, so that's how the CPR works. You are familiar with all this, yeah?

I: Yeah.

R: And that picture there is the back deck of the Armorique. The Armorique tows the CPR from Roscoff in France back to Plymouth once a month and this is the kind of installation we have to do. So that's another thing we have to do: We will source a ship, we talk to someone as high as we can in that ship’s management chain and even that can be quite a convoluted thing, because you have things like owners, charterers, owner operators, management companies and you have to find the right thread to get the permissions.

I: That was exactly one of my questions. Who is the point of contact if you are trying …

R: You try and go as high up as you can. One of the last ones I personally sourced, I was lucky enough to speak directly to the owner of the company and once he was on board … He can say to his underlings “Let's make this work”, but if you speak half way up the food chain, you know …

I: And are they difficult to track down sometimes?

R: Sometimes, yeah. Sometimes it's easier. Invariably, the bigger the company, the bigger the web, if you like, the more complex the web.

I: What do you think is their interest or motivation to cooperate with you?

R: We'll run through this. I got some quotes in it, what people have said. So you'll see if that will answer your question.

I: Perfect.

R: And once we have sourced the ship … None of the ships we use, apart from the research ships, are designed for towing at sea. Every type of ship you can imagine, big sailing ships, oil tankers, ferries, ROROs, the list goes on … So what we have to do is work out how they are going to tow. The trick is to get the bosun involved, who is like the senior non-officer guy. He is in charge of the guys, he is like the foreman on board. He will have a good working relationship with the Captain. So if you get him on board, you know you are on a winner. So this is one installation we have done. This is the ship’s normal mooring winch, this is there all the time and normally it has a big rope that comes out at the side and holds the ship against the quay. But this davit, we got made, and then we asked them “We made this davit, can we weld it on your ship, please?” So we had to organise with a welding or engineering company to get it on board. And you have to make sure it has got clearance over the side, because some of the ships have big sponsons, overhangs. You have to worry about the steering gear, the propeller, you have to take all of this into consideration. On this one here, this was the best place to put it, so we get it welded, we get it examined by an outside examiner to make sure it is compliant with all the lifting and towing regulations, and it gets re-tested every twelve months. We have got this list here of all our ships and this is when the test dates are due. Again, we supply blocks, we supply the wire, and all these guys operate. So what happens when they are towing? They not just put it in, they are actually logging the metadata for us, they are recording the positions, they are recording the time. And then there is like a [unclear] of ships that have towed for us in the past, because like you said earlier on, you know, the scientists see their data and they don't always understand where the information comes from.

I: Right.

R: So this is just a cross-section of ships. So this one here is the AAL Melbourne and that tows from Vancouver to Japan. That has been towed for us for two years now and that was a nice trip for me, actually, I went out to Vancouver to source it and work out the tow arrangements with the captain. That is one of the bonuses of the job, you see. But they were so pleased to do it. Their interaction with us was all over their Facebook, it has been in reports and magazines, that sort of stuff and they took these pictures Mid-Atlantic [sic]. That is the chief officer, the crew, our CPR, a big grinning picture and it went all over their company magazines. So they were happy with that one. That is the Green Frost that used to run for us on our most northerly route which goes all the way up to Svalbard. Unfortunately, that is not going for us now, but we have now replaced that with a Norwegian mail ship that goes up to Svalbard. This was a trip from me out to Ghana. Basically we were teaching them how to set up a CPR. They bought some off of us and that was the day of the inaugural and I have got a pile of stories that I could tell you about that trip. It was really exciting. And an [unclear] as well, yeah. This is the Pharos SG; SG stands for South Georgia. So it is Falklands-South Georgia, South Atlantic. And that tows for us from Falklands to South Georgia. It is a fisheries protection vessel, so they do it on their normal transits out to their patrol area and we are less able to request times, because of the nature of its job, you know. It will have to go off and do patrolling work. They don't publicise that because obviously people they are trying to catch would go somewhere else. This is a good one, this is the Stad Amsterdam. That was a sailing ship chartered by Dutch TV and Dutch radio and they recreated Darwin’s voyage, which started in Plymouth. They towed a plankton recorder to the Canary Islands and then down on to Brazil. You see our equipment there on lovely polished decks. When we turned up their bosun on board saw our steel wire and … So we had to pad everything out. We actually got interviewed on that one by Darwin’s grand-daughter.

I: Okay.

R: This one is a ship named Tara, have you ever heard of the Tara?

I: Yeah, I have heard of that one.

R: They towed a CPR for us on what would be the most northerly circumnavigation possible. They went up to Norway, turned right, kept the ice on the left and went around the world and they were towing a CPR as they went. And for that I went down to Norway to show the guys how it all works just before they departed. Other interesting pictures there … This is the sort of thing where you have to be careful. You remember the picture with the davit before? This is the Hildasay that tows up into the Shetlands … Aberdeen-Shetlands. And here is our davit. We have to be really really careful not to interfere with any of the safety gear. So when you go on board you have got to be knowledgable about this and what you are trying to do is get the Captain, or the Chief Officer if he delegates it to the Chief Officer. You are trying to say “This is a good place for the davit”, but you want those words to come out of their mouth. That is the psychology. So once they think it is their idea or they are involved with the decision-making, they are far more comfortable with it.

I: I see.

R: And this is on the Hafnia, when we were rigging up this ship. And these are all the boxes and the davit on the port side, which is before it got welded up here. That was a day where we really had to do the liaison with the engineers that we asked to do the job on the ship and they were trying to move the ship from one quay to another. Our engineers were on board and they wanted like five minutes, the Chief Officer said “We have got to go now”; “Chief, can we just have two minutes?” and he said “You got one minute”. Because we are paying the engineers, so we just have this band to go in, so we managed to get the job done in a single [unclear]. So that was kind of stressful, but good.

I: Yeah.

R: Ah, there we go. So this is what I was talking about, the logistics. You remember what I said about the yellow boxes that sort of disappear in a truck? That’s Seaforth Docks at Liverpool and as you can see here it is massive. It doesn’t do it justice, to be honest. And three of our ships will tie up along this berth. There is a locked gate out here. This is another one of our ships, this is one of ours as well but that is a different berth. And these containers … you drive around here in our little blue van and it is just like container city. It is scary stuff and the forklifts are whizzing by and it is a very, very busy place. So we put our yellow box in one of the carriers’ vans and they have got to try to get it down to this quay. The ultimate aim is to get it down to that quay at the right day to meet the correct ship and no one else … yeah, that it would not disappear. So the driver arrives here, that is gate one, they then have got to get through security gate two and there is a line there, that is the big security gate. If any one is found on this side or any illegal immigrants are found this side, the company responsible for security will get a quite significant fine. So you see, they are not going to let anyone in and we are trying to get our vans down. Then we are trying to get it down to the quay. We used to get it delivered to this shed and the people who are in that shed were going to charge us. But we have got two wonderful ladies in Liverpool, they said “You can’t charge them, they are a charity!” And they work for what we call the heavy cargo office, it is the red portal cabin here. So we address it to them personally and every time we are going to see them, we give them a bunch of flowers or some chocolate and say “Thank you”, and Christmas cards, you know, you have got to keep them aboard. So they take it on there and their window looks all the way alongside and they just ring up a forklift driver, “the Atlantic Sea is in, take yellow box 164 down to the Atlantic Sea.” And it is that communication, and then it is the retrieval all the way back to Plymouth.

I: That is really amazing. I mean, you have to know the place, really, and the people. That is what philosophers call local knowledge, you know, of places … And you said this is Liverpool, right?

R: Yeah.

I: And, now with …

R: A similar story could replicate that story for every port we operate from.

I: And are there differences between them?

R: Massively. Every one has a unique story, if you like. It is those personal relationships, yeah …

I: That's very interesting.

R: So what is this? Bear in mind that this presentation was given to our board to let them know “Don’t take any of this for granted.” So how many people work in the operations team? You asked me that just a minute ago, you know, there are my two colleagues, but the answer is, it is just about a hundred plus. Now I can’t remember the figure from the top of my head. Because what we are actually doing is managing this big volunteer army, or navy because we are seaborne. And we have got the ship’s agents, we have got the owners, we have got the charterers, we have got stevedores, ship managers, forklift operators, terminal managers, heavy cargo operators, shipping line admin staff, friendly engineering companies, shore side fitters, and then of course the crew and all the chain of command on board. And it is a constant thing. If we go back to Liverpool, because that is what we were talking about, we have got the heavy cargo operators, who are on first-name terms with our friendly engineering company, who all know the terminal manager. So what I am trying to say is, if you upset that relationship with one, you have upset it with all three. So if that link, if that circle, is broken, it is broken. And again, you know, the weakest chain … because apart from that, we also pay the ships, we give them a small fee of tens of pounds for each tow they do. Invariably they buy things like videos, well in my age there were videos, but you know, for the ship’s entertainment fund. One ship would save it all up and then they take the whole crew skiing. But even for that to happen we are reliant on, you know, the shipping line admin staff to pass that money on to them. So it is just about fifty, sixty pounds and that has got to go through the books. So it gets down to the Captain and we are still happy, so he can take his crew skiing.

I: I was going to ask about that. I think Rob told me that you give them sixty pounds per tow, right?

R: Yeah.

I: I was wondering how that works and how the money is actually transferred?

R: There is no one answer to that one. Some shipping companies would not even accept it, they would donate to charity. For some, once you have made the offer, it is very important to them, depending on the parts of the world and the nationality of the crews it is more important or less important. Some want it every time, so you pay every month, some will set it up with their shore side admin staff, so they send us an invoice every quarter, or every six months and they do it that way to keep the admin down.

I: That is really interesting.

R: If we ever go and visit any of those people, if we leave here, one of our tricks will be to go to the supermarket and buy the big tubs of sweets. So we have a boot full of sweets and every one we meet gets a box of sweets to say “Thank you very much”.

I: So when you have the ship established and it is towing regularly, who do you still regularly communicate with?

R: Every time we send out a CPR, we will send a tow request and it is always a request, you know, “Would you mind?”, “please”, you have got to get the language correct. And then you also have to bear in mind that English is not the first language for a lot of the Captains, so you cannot be too waffly, otherwise it gets lost, so “please tow!” The coordinates A to B, pick it up and drop it off at this place, on this you can expand on if you get the [unclear] going and you build the relationships. Every letter we send is always addressed to the Captain, the Chief Officer is always in copy, because the Chief Officer does the day-to-day running. And then it depends on the particular port. We have just seen Liverpool. If we are going to send it to Liverpool, the terminal manager will know, the heavy cargo operators will know, because that are the two lovely ladies I referred to, and depending on the ship, if it is a charterer, the charterer is in.

I: You send these via mail or email?

R: Email now. When I first started it was hand-written.

I: Okay, I see. Until now I was mostly … and in the draft of this chapter as well, I was always considering the crew as the main people … I had no idea about this variety of people that are involved.

R: So hopefully the previous slide emphasised why.

I: Yeah, definitely.

R: And like I said, you see these people and we are really lucky that a lot of the people we are dealing with at the ports are of a generation who are long-term employees. I fear for the person who takes over for me in five, ten years time or whatever. The younger generation will see them two years in and go, so you are not building up long-term relationships. We will see how that pans out but in the moment everything is good, so … It will be another challenge. There you go, these are some of the quotes we had over the years …

I: Yeah … “to help look after our wonderful oceans” … So … what are some reasons that you might be rejected? Or that people might say “no, we don’t want to do it”?

R: Oh, now that is a good question. Yeah, we have been rejected. The last rejection we had … so, how do I say this? The ship we were rigging up, one that we sourced and we did our PR work, you know, “It is good for you, it is good for us”, and all the value of what we are doing … But it had to be set up in an overseas location. We sent someone who kind of works for us, who lives in that country, but he didn’t have those people skills. And he didn’t take into account the safety gear aboard the ship and it got all out of hand and we were told to leave. And once that is gone, it is very difficult to get back into that company. That was a real big … I actually went in the end, I have sourced another ship, I don’t know, it took me another month or so to source another ship, but then I said “right, boss, I am going to have to go and [unclear]”. And we were lucky that it has been successful since. But you can never take anything for granted. The guy who went was a really nice guy, he is really good at what he does, but he is more scientific-based. So like I said earlier on, we are the portal, our group is the portal between the real world and the science world. And we are sort of managing scientists’ expectations. He probably went on board that ship with too great expectations against fitting in with somebody else’s busy schedule. Does that make sense?

I: Yeah, I can see that. But then I guess that does not happen very often.

R: Not very often, no.

I: So most of the ships are quite happy.

R: Well, normally, yeah. We have got quite a good success rate. But you never take any of it for granted. You never take any of that final 500 yards or 500 metres for granted. You know, with that picture of the circle, you only have to piss someone off once and you have lost it with the company forever.

I: So when you are trying to find a new ship, where do you start? Where do you start looking?

R: It depends on the area. If it’s in the North Sea, I would ring … The scientists will say to the Director “Can Lance or David find a ship in such and such area?” If it is in the North Sea or the English Channel, somewhere we are already operating, you want make it easy for yourself, so you ring up one of our contacts, “Hello Bob,” or whatever, “have you got anything? Would it be okay if we come and have a look?” If not, then it is Lloyd’s List, the internet … And you start doing your research and you make some phone calls. Another one I had to source was a replacement for the Green Frost to go up to Svalbard. The first thing I did was to ring the company who operated it and they said “Oh no, we stopped that route now. Everything goes by air.” And then I made another phone call to Norway and they said “Why don’t you try this logistics firm?” So I tried the logistics firm and they said “Yeah, there is a ship that goes up there, if you want to put stuff on you need to speak with this guy.” And then eventually I got to the owner of the company and he said yes, but there is only one ship that goes up. So that was again … You know, you have to tread carefully but once you have made that contact and they say “yes” and give you permission, you have got to be enthusiastic all the time. You can’t … The worst thing you could do is, “yeah, we give you permission” and then you don’t get back to them for about three weeks.

I: And then once you have the ship, the next step would be to …

R: The next thing would be “Oh, thank you for giving permission”, because they will give permission, but don’t forget the Captain. The Captain of these ships are Kings of their ship. So the owner may give permission, the management companies, the charterers may give permission, but if the Captain says “No, we can’t do this”, it can’t happen. So again, I went to Tromsø, I went to see the Captain and I hit it off with the Captain quite well, he was a similar age, I am into sailing and he is into sailing, so we had plenty to talk about. And we did all that sort of bantering and the normal stuff. And then we went out on the deck and he said “Yeah, we can put it here and tow.” So, we got the notebook out and we draw our little tow plans, we then go and speak to the local engineering company, we try to get them on board, and then you try to negotiate down saying that we are a charity organisation. “In the UK, we pay X amount of pounds for this. I know we are up here in the northern climate, but I wouldn’t expect it to be too much more.” So you almost tell them to over-charge you, we are in that sort of discussion all the time.

I: And when you have the ship kind of figured out, then you worry about the port, or …

R: Yeah, then you worry about how to get the box to the ship. And again, when you would ask the Captain’s permission, they might have an advice. Sometimes that works, sometimes you have to go somewhere else in the chain. It all depends on the site, the size of the location, the owners, and the ports. We have got some ships that would tie up on another company’s berth. So company A ties up against company B’s berth, but actually we have got working relations with both of them. So it is like “Company B, do you mind if we bring our boxes for …” It is one of our most valuable company assets, in my mind, it is here, our contact sheet.

I: But sometimes you get ports that you already know, but if there is an entirely new port, it is probably very difficult.

R: It is, yeah. It is, but when we do the visit, we will go and do the ship’s visit, we get permission from the Captain and work out the tow plan, then we will go and see the engineering company and get them to give us a quote to put the davit on, and then you try to put the [unclear] on. Because you don’t want to set fire to the ship, you take that into account, while the davit is going there, is there a paint worker below? You are pointing that out to the engineering company and ask them to produce a risk assessment, save working practice and methods statements. Then before we leave that port, it is actually walking back the final five hundred. “Okay, we can leave it here? Is it okay if the boxes get left here?” “Yeah, that’s no problem.” And actually, the boxes in Liverpool, when they come off the ship, it works like a well-oiled machine there. The forklift driver now detects these yellow boxes because they are quite easy to identify and they leave them by the public toilet in the docks. So all this world-class science, the meeting place is at the back of the public toilets.

I: Okay, that's interesting.

R: Shall we move to the next slide?

I: Yeah, sure.

R: Oh, I'll show you that as a separate one. And this is our global … You have seen these before, right?

I: Yeah.

R: So quickly … Again, this is now … Cyprus has come on board, we send stuff out to Japan.

I: And you said you visited the ships every twelve months, was that correct?

R: No, the tow points are examined every twelve months, so we will send any of our friendly engineering companies to do the examination and issue a certificate to prove everything is safe and give that to the Captain. We have got briefing books we give to the Captain, and even there, because we are required to give things like risk assessment and safe working practices to the ships, but you don’t want to give them the risk assessment and say “This is risky”, by nature, you know. So we have written this briefing book which is in a gentle way leading you. It is “Thank you very much” and the risk assessment is on page four. [unclear] Again, it is the way you get the message out.

I: I was going to ask about that as well, but … You do regular visits the ships sometimes, yeah?

R: Yeah, we try to visit every ship at least once every three years. That is what we try to do. Sometimes we are quicker, sometimes we are slightly off. But if we don’t see that ship we speak to the sister ship and sometimes the Captains rotate, so …

I: And how do these visits typically proceed?

R: If it’s a good will visit?

I: Yeah.

R: Yeah, let’s have a look. A picture speaks a thousand words. … These are just some pictures of ships, but I’ll show you some pictures of people, which are far more interesting. … This is Dave Wilson, who is about 18 months into his post now as ship liaison officer, and my visit to Liverpool. And the purpose of this visit was because Liverpool and Immingham are okay, but are some of our larger ports. So I took Dave up and all we were doing was meeting people and introducing him so he can build his own relationships alongside the ones I have already established. Here we are on the back deck of the Norbay. You see again our davit. And the Norbay is a ship that runs from Liverpool across to Ireland and is out for us once a month. And there you see our wire will go around that winch, through that [unclear] leading up to the block. There is Dave and this is the Chief Officer or the Second Officer, so he came out and escorted him. He handles our CPRs all the times, so it is good now to put faces to faces, so next time, if there is an issue, he will ring up and it is not “Mr Wilson” it is “Dave” now, you know. He will say “I was the chocolate man when we arrived on board.” It is the ice-breaker for all future conversations. There we go. These are our heavy cargo officers in Liverpool and if anyone deserves to a medal for citizen science, it is this pair, because they really do make it work for us up in Liverpool. They don’t shake hands, they only give you a hug, a double hug for the team. And this is on the back of one of the big container ships that we went to have a look at. And this thing is massive. But the crew on there was fantastic. That deck there is probably four stories up and they built all these little gantries and all these little trolleys to get our box … I just described how in Liverpool they will get it to the ship and it gets put on deck at sea level. And they built all these mechanisms so they can get it up through all the decks to the [unclear] site. They were disappointed that they were having to stop the programme, because their ship was going [unclear]. They are one of those people, professional mariners, for the health of the oceans, thankful. … That was an issue that we had fixed. You see, that is the back mooring deck, it is huge.

I: Yeah.

R: And like I said, this is what we are doing. The yellow boxes pale into insignificance when you drive them around, compared to those masses of containers and then it arrives on the back of this.

I: It's amazing, yeah.

R: This one just came in from America when we got there. All these old American cars were coming off. But again, you see our boxes going on … That is the toilet block, so the yellow boxes get dropped off by the toilets, so everyone knows … And that is another thing you do, you go away and … If you try to visit as many ships as you can, it can be really late night working but a lot of hanging around, if you like. You go and see people and I am always conscious that I am taking up their time. So I will be “Thank you very much for the work you do. You want to come out for lunch with us?” “No I am a bit busy today.” “Okay mate, if you are ever down in Plymouth, come and look us up.” And then you get out of his way, you see. But that short conversation, it will be a little bit longer than that, is invaluable. Then you get out of their way and you have a coffee yourself and you wait for the next appointment, which could be in in twenty minutes, in half an hour, or in five hours time.

I: I see.

R: And then we went from Liverpool to Immingham, this is the Lagarfoss and they wanted to do a unique tow point put on. And the skipper of that ship is, rightly so, so house-proud of his ship, you scrub your shoes if you go off the gang plank and you go on board. And he does tow for us so that's really cool. And again, here is our CPR with all the instrumentation on, here is our tow wire, [unclear] to the rig.

I: It's really amazing, such a small thing in these ports.

R: Yeah, and you can see there is our car, this is the container and these things are whizzing up and down all the time, so. … Ah, there we go. Do you know what is in the bag?

I: Chocolate?

R: There you go. Chocolate and annual reports. This is the Chief Officer coming down and we just put this new arrangement on his ship and he was very happy with it, so that's good. … This is another ship, this is the Hafnia Seaways, which tows from the Humber to the Elb and from the Elb to the Humber. And this is before the davit goes in place and we were initially concerned, because the only logical place for it to go is close to the lifeboat. So we got the Chief Engineer out and we did that thing where our words came out of his. And in the end we got it installed in the best place to tow, which is just out of the way of the lifeboat. It is one of those decisions that you don't want to make wholly on your own. If the ship's officer is happy, every one is happy.

I: Does it actually matter where on the ship the CPR hangs out. Does it make a difference?

R: It's … The CPR is a great scientific instrument if it is used on large … if averaged temporal and spatial. It is not a precise instrument. We say that it flies between five and ten metres depth. You can argue where it comes off the ship, it is different if it's in the wake of the ship, but invariably they track into the low-pressure area anyway. So you have to be conscious about that. If here is the ship and you put it off the side, invariably it will track like this. So you have to be careful when you start hauling it in, especially on the side. So you do the best you can, but like I said, none of the ships are designed for towing. There is a finite budget and what we do is … you heard of what CPR stands for? Continuous Plankton Recorder?

I: Yeah.

R: We like to say it is cost-effective, proven, and reliable. … That was the sister ship next door. They are just huge aren't they? And then we went back to Liverpool. Does that answer your question?

I: Yeah. And when the tow is actually happening, the people who handle the CPRs are members of the crew, right? And are they instructed personally on these visits, too, or?

R: Yeah, let's have a look at the briefing book that we produce. There are laws and regulations in the UK, but SAHFOS is an international organisation. So there are two conflicting pieces of legislation and SAHFOS always adheres to the most stringent. In the UK, if you supply equipment, it is provision to use an equipment regulation. You have to make sure the equipment is fit-for-purpose, is examined regularly, and people are trained to use it. That is a book that big in a nutshell. So the way we do the training is we will go there and we talk to the Captain, we talk to the Chief Officer, we talk to the Bosun and we talk through the process with them. The winches are 90% of the time the ships' winches, so we say "Use the winches in accordance with the normal ship's winch operating procedures". But we are using it for a different purpose. That is why we produce a briefing book and every time we go to a ship, we will give them an updated version. And if the lapse is too great we will put it in the post for them. I have run through this [unclear] and then we bind all this [unclear].

I: Can I take a copy of that as well?

R: Yeah. So we put a message in for the bosun why we are doing it all and "thank you very much". That is what the instrument actually is. This says "deploying will not interfere with the normal ship's business". That is massively important. As you know, it doesn't stop or slow down or alter course for us. They are doing all this when it happens, so the CPR is hauled, they fill in the log form, it comes back to us, and this is the best I can get in one slide to give you a bit of an overview of what happens. … How they get hold of us. … A copy of the log form we ask them to fill out. And then we go into things like the method statement. "The winch should be operated in accordance with the ship's procedures." … So they are generic winches. And then we go into the risk assessment, sort of deeper into the document, it is not the first page you flip to. … And some of them are multiple tows and this is how you change it. … Sometimes we ask them to do this … And that is a coast guard notice. We have to adhere to … This is the simplest way to abide by that. And this is what else is on. When this became a new instrument we stuck an extra page in, because when they open the box and they see all this, you know. To let them know "we are not tracking you or monitoring you. It is not a bomb, it is all save." So what they are dealing with is all in the books. And this is important. Shipping companies … we found that some are very hot on this, some are less hot, but we use the most stringent of all the regulations we found, applied it to towing and lifting and that's what we adhere to. And that's the briefing book.

I: So are the people that handle the CPRs sometimes replaced or is there fluctuation among the crews?

R: Oh exactly, there is. There is always a watering down and that is just a fact of life. And every ship almost will have an A crew and a B crew, and certainly the officers are so many months on and so many months off. You are only going to see one on that initial visit. So that is why this has to be well detailed. And don't forget that every time we request a tow an accompanying email/letter will go with it. And if they have got any concerns, they will get straight back to us. Again, it is building up relationships, building up trust.

I: Interesting. Because I was wondering how direct the interaction is between people like you and those who are standing there putting the CPR into the water. It seems that you give the instructions rather indirectly, so to speak?

R: Yeah, it is very direct in the first instance, it is backed up on our ship's visit. Bear in mind that they are doing it every month for us, so we might not see them for 36 months and there will be crew A, crew B, crew A, crew B, new guy, all this sort of stuff. That is why we back it up with this and that is why we back it up with electronic communication. It is very much like building and maintaining relationships with the Captains.

I: I see.

R: I just picked one of the last ships. This is from the Captain [unclear] new guy. "I wanted to drop you a note and say good luck with your first tow of the series of 2017". So this is what they wrote to the guy. It is that sort of level that we are. Now if I pick a different ship, the Anglia, this is again from the Captain, "Hi Dave", so we are back to first name terms, "we have just received the plankton recorder, have a nice weekend".

I: Okay.

R: Does that answer the question?

I: Yeah. So I guess most of the communication happens via email by now, right?

R: Yeah, email backed up with visits, yeah. And we leave little notes in the yellow boxes every now and then as well. So things like, "Could you change over the head blocks, please? Because we would like the old ones back for an examination".

I: I would be interested in seeing what the box actually looks like when it's opened. If there are any …

R: Yeah, there are. We are going to have a quick look. …

I: So is this one that came back?

R: No, this one is ready to go out to a ship called the Benguela Stream, it goes to Portsmouth and it's a Banana boat going all the way across to the Caribbean. So it is really simple, there is no extra gear on this one. Sometimes you will see extra [unclear], sometimes you see a replacement tow box. And then if you look on the rack, you see our wires. And you see the red and yellow marks are for different tow depths.

I: And the person who has filled in the tow log. They do it by hand, right?

R: Or sometimes they do it electronically and email it back.

I: And do they put it in these boxes as well, or?

R: Sometimes they are in the boxes, sometimes they come back via email. … Here, they come back like this. This one came back from that very ship.

I: And who will be the one who usually fills these in?

R: It will be the bridge officer, whoever is doing watch-keeping at that time. In this one it says it's the Captain and it says who is writing the log. It has got it on there for you. And on this incident it is the Second Officer.

I: And I guess these are very important.

R: Oh, massively so.

I: Is there any kind of variability of the reliability? Are the ships consistent in filling these in, or?

R: Yeah, of course they are. Whatever you do, it has a degree of accuracy. But again, you need to think of what you are trying to achieve. This much silk equals ten nautical miles. The ship can be … this digit here equates to a tenth of a nautical mile, 185 metres. But the ship tows on a hundred metre cable, the ship can be 300 metres long. So what are you trying to record? If you accept those sort of areas … So that position there is not the exact position, it is not enough digits anyway to do so. That is not the exact position within ten yards to where the CPR popped out of the water.

I: So does it ever happen that you get a sheet and you are like "I can't use this" for whatever reason?

R: Yeah, we do. We would get back to the ship as a first instant. Bearing in mind that a lot of our ships are ferries, they go the same track month in, month out, within reasonable amount. If they forgot to put in an altered course and there is an island in between, it looks like we are collecting plankton up the High Street. So that is an obvious one and we would address that and get the accurate data back. And it is getting better and better all the time, I don't know if you have spoken with Rob about this?

I: A little bit, yeah.

R: So you obviously know that … The CPR is a great instrument for large areas and the large amounts of time that we sampled in. We are making it more accurate as the technology allows us. We have been going for 86 years now, so the first ones didn't have GPS. They didn't have Decca. So some of our original tow logs would have been done by sun sights and star sights, because that is how the people navigated. But that was great and it has slightly improved all the time. That is not to say that what happened before was wrong, it was just …

I: But as far as I understood from my interview with Rob, you don't regularly check with the GPS track? Or are you thinking about automating these … ?

R: Yeah, they will be. That's the logical progression.

I: So do you think at some point you won't need these sheets any more, or?

R: I think we are a long way from that at the moment. If not, they are going to be supplemented by something else from the ship.

I: Okay … What else do I have? We touched upon that a little bit already. I was interested in the sentiments or the attitude of the companies towards the survey or science in general. I think it was on this slide …

R: Yeah, you won't get a stock answer, because we are talking about a hundred different individuals. Some of them do it because they are told to by their boss, some of them do it, because they are really enthused.

I: But do you get any kind of feedback? Is there any form … Well, you have the personal communication …

R: Yeah, that's what it is. It's personal communication via email or notes in the box. Yeah, what was the latest one? A ship was towing for us and it had to stop. It had a mechanical malfunction, so they hauled it in and said "would you like us to re-commence towing"? The answer was they couldn't, because it would have messed up our positioning assignments of the silk. So it was "No. Dear Captain, thank you for letting us know. What you have achieved already is really great. We will send you another box and we will go again next month." So it is that sort of level.

I: Are there any common or typical issues that the ships come up with?

R: There is nothing common. I have been here twenty years and you still get things … We had a log jamming the propeller, but it's …

I: Have these tow logs changed in any way since you came here? Or the amount of information that are required?

R: Not really, obviously the telephone numbers have changed, the personnel has changed. There is a big file cabin next door to the laboratory, a fire-proof cabinet, that goes back years. So you can pull out the metadata from many, many years ago. And you know about our sample archive, don't you? We actually have a sample archive.

I: Yeah, Rob showed me that. Maybe I come back to health and safety risks of doing this. What are the main risks of handling CPRs?

R: Well, let's go back to the … Because I have [unclear] it to the ship if you like. … Do you understand that risk is the hazard by the likelihood? That is a common thing in risk assessment all across the industry. So the risk is hazard multiplied by the likelihood. So you could be dealing with the most radioactive isotopes ever and if it drops on you, you disintegrate and fall apart to dust or whatever. So the risk is really severe but you only do it once every five years and you are highly trained and have tip top personal protective equipment. So the likelihood is one. So it will be like five times one. That's the way it works. Even though it is very dangerous, [unclear] actually affecting you, is minimal. So we kind of scored everything down here. We have got manual handling. Do you want me to read them out, or?

I: No, I can read them. So highest risk would be …

R: … This scored a four there. And again they are a subjective, generic scoring of this …

I: Have any accidents or something like that ever happened?

R: Yeah, there have been a couple but nothing serious. They forgot to shackle the wire on once and the guy who tried to capture it cut his hand in the middle of the Atlantic. And the Captain just told him off, they got the first-aid kit out. And he told him off because it is just a crazy thing to do. It is probably, you know, "Oh, I want to catch that because I don't want to be in trouble, because that is really important, I don't want it to go over the side." I don't know what went through his head when he caught it and cut his hand. But it's an excellent safety record, probably bar none, if you like. There are probably more accidents on research ships than we have. Yeah, I'd like to see that, actually. It would be a good thing. I wonder what the accident record would look like on the Discovery or the Shackleton compared to ours, where we are doing at the moment ten thousand nautical miles a month on fifteen, sixteen, seventeen different platforms with many nationalities. It would be quite interesting to see. So we are inherently safe is what I am saying.

I: Okay.

R: And then it goes on and on and on. That's how we scored the risks.

I: Let's see … I'm jumping a bit between topics. When you do the visits to the ships, do you spend the whole day there, or does it depend?

R: No, it depends. One thing I have learned over the years is never go there with a full stomach because you never turn down hospitality. One time I went to Liverpool with another guy who works here. We went to Liverpool and stayed in a nice B&B. We got up and had a big fried breakfast. It will keep us going throughout the day, we thought. And then we went to the friendly port engineers who were on that list which I showed you earlier, "Hello Steve, how are you doing? Nice to meet you, thank you very much for what you do", all that sort of stuff and a box of chocolate for the lady who does his accounts. "So what shall we do now? We can't go on the ship for another two hours." So we went to a café and it is like a dockyard café with really nice and friendly people and I said "I just have a cup of tea and a chocolate bar". And they made some cake, they said "No, you don't want a chocolate bar" and you couldn't say no to these ladies at the café. And she gives us a piece of chocolate cake and it was like boom. And I tried breaking it into crumbs and hide it, so … And eventually we got on the ship and we saw the Captain, who introduced us to the Chief Officer and they said "Oh yeah, we will talk about that but first it's lunch. You must come to lunch with us."

I: But these visits must be fun.

R: Of course it's fun, yeah.

I: I have one question going back to when you agree with a ship about making a tow. Is there any kind of formal agreement or contract or something like that?

R: It's not a contract, because they are volunteers. We know, we will receive a letter or an email that says "We give you permission" and then that gets put into the ship's root files. There is a big pile of ships' root files upstairs. And that is our thing, your managing director said yes. So when we set up the ship, there will be a pile of emails that say "Thank you Captain for inviting us on board." "Yeah, it's great to have you, we can't wait to start towing." This is filed and it builds up the case, if you like.

I: What if a CPR ever got lost?

R: Well, they have got lost.

I: Who is liable for that? Is it your risk?

R: It's our risk. We accept the risk, yeah, it's what we do. Scientists come here on courses and they come here to set up a CPR Survey. We run two different courses, both recognised and authorised by IMarEST, so that gives us a little extra badge, a logo we can stick on. If people come here and they want to set up their own surveys, they come here and work alongside us for ten weeks and they follow a course schedule. They come and their number one aim is to collect plankton data in a specific area. We educate them, "Our number one aim: Don't injure or kill anyone. Don't lose the equipment. Collect the data." That's our working ethos down here.

I: Okay. So how do CPRs get lost?

R: How do they get lost? Well, if you read our annual report that is coming out, last year we had two unusual occurrences. They hit an underwater obstruction, so the [unclear] broke. Another one got lost in a tow through the Northwest Passage. The ship said "We are clear of ice." "Oh no, we are coming into ice, so we haul it in." So they hauled it in, did all the marking of the silk and did all the logging procedures, put it back in the water. A little bit of ice … [unclear] bit of the CPR come back, it just ripped our casing off. I mean, you tow in the Mid-Atlantic in some of the most extreme environments on the planet, you accept it. Last year was a bad year. We lost three CPRs, which is unheard of. If we lose one in three years, that would be more in the normal parameters.

I: But they don't get lost somewhere in the logistics?

R: No. Years ago, we had one. The logistics messed up and they loaded it on the wrong ship and the ship sunk. So that was real bad luck for the CPR and even worse luck for the ship. We put things like owner's addresses on and if they do, we track it down with a fever of a bloodhound, if you like, to keep on top of it. It is in the other room now, but I keep a tracking list of where all the CPRs are at any one time.

I: And you work with usual logistics companies?

R: Oh yeah, it's the courier companies that will take it. Remember the final 500 slide? They will take it from here as far down as the final 500 and then it goes into nice people's hands to do the final 500 metres down to the correct ship.

I: Okay. I was also wondering if there are any particular issues with specific places, with getting them back from specific places in the world …

R: Yeah, it is another part of our skill set, if you like. It is how to talk to customs people, how to make sure the customs documentation is correct the first time. If we got things like formalin on board, we should [unclear] when it leaves here. It is watered down on its return journey. If it has got lithium batteries … We have got a pile of guidelines here to tell us how to do all the paperwork correctly.

I: And you have to re-do this for every tow, right?

R: It depends. If it is leaving for the UK, it is very straightforward. If it goes from the UK and gets exported up to Iceland, then that's, you have to do an invoice for customs, you have to do a dangerous goods note because it is charged with high concentrations of formalin on the way up. You have to make sure the right label is on the box.

I: I see. Okay, so I guess most of my questions on the operations part have been answered.

R: There is one little story.

I: Okay.

R: One of the ships heavily involved in marine science was working for an American research institute and they fell foul of … Their expectations got the better of … They were asking the ship to do too much. They owed the ship money or it wasn't paid promptly, they started using the wrong language to the ship, they weren't having the particular gear they had tested on board … The skipper said "Stop. Take all your gear off, take all the people off and go." We had our CPR on board and he said "No problem with that" and kept it going. The next thing was I got an email from America saying "Help! How do you do this? What should we be adhering to?"

I: I see. Yeah, these stories are always very helpful, so if you have more …

R: Oh yeah, I collect them a little bit.

I: It has been very helpful already. So let's talk a little bit about the maintenance of things here and about the technology. If I understand correctly you are also coordinating the maintenance of the instrumentation?

R: … of the CPR.

I: Of the CPR, okay.

R: When you talk about instrumentation at SAHFOS, we have the CPR workshop, which is my job and then you have the instrumentation. We just make sure … We are the interfaces, if you like. We [unclear] the instrumentation. We will write the tow schedule in the beginning of the month, they tell us what instruments they want fitted onto the CPR. So this is in addition to the plankton data. We will make sure that it is bolted on. Because they have batteries in … yeah, only batteries at the moment, but if we talk about specific chemicals, we will make sure that all the paperwork is right for the transport companies. And the goal is to get all that transport documentation right the first time, then there isn't a glitch. If there is a glitch in it, it holds things up. If it holds things up, you are screwed, because the ship won't wait for you.

I: I see. So do the CPRs get damaged?

R: Oh yeah. We have had CPRs this year … Let me show you this. … This is one of the videos … This is the Armorique. … You see the CPR going into the water? You see the ship doesn't slow down and it gets bashed against the side of the ship. … Now they are hauling it up the side. You see the boat guy there with the radio and the CPR on board. The skipper is writing it down now, the position for that log form. This is Rame Head just off of Plymouth here, so it's a nice local one. And then they are all on board and we move on to this ship. I will turn the sound back on. This is the Benguela Stream, the box is just put there and they have to change the cassettes. So this is 2,000 miles out in the Atlantic. They have just done 500 miles and they change the CPR. They are fifteen hundred miles from the UK now. Listen to this … Boom! Invariably, there is quite a lot of damage. And what they do now is chaining it on. They take the cassette out, again, this is the bosun. With health and safety there, it depends on the ship's crew, or the ship's officer [unclear]. Some of them are wearing hard hats some aren't. Some are wearing safety boots, some are wearing flip-flops but they are all confident people. This quite a benign sea. We [unclear] in force 8 and force 9, we have towed in force ten or eleven in the past. But if it's too rough they'll retrieve and if they hit a storm, they'll just take it out. [unclear] There we go, this is just a cartoon that we … So yeah, there is lots of damage on the CPRs that come back. [unclear] ripped the entire gear box off on retrieval, because it just caught the side of the ship. You see the forces involved there, yeah?

I: It's really massive. And do you do all the repairing here?

R: Yeah, we do. If components have to be made … That's our little spares cupboard in here. Spare springs, different amounts of bolts, all the little gears that go inside the gearbox. We take the gearbox apart every now and then and refurbish the gearbox.

I: Are there parts that are replaced in intervals?

R: Yeah the only one we do in intervals is the shock absorber pin. So we change those regardless every 24 months. [unclear] Yeah, so we got a pile of spares there and there is a pile of spares for the internal as well.

I: Is there a standard inspection of the CPR when it comes back?

R: Yeah. We have a QA manual, where you check this and you check that.

I: So I guess that is the first thing that is being done when it comes back …

R: Yeah, we take it out in the back, take it to [unclear], stick it under the fume cover, one guy will service and do any repairs on the body, give it a coating and silver paint, stick it back on the rack when all that is done. And then the repairs get written down in the repair book. There is a list of when to change the shock absorber pin, so we make sure that it is in date. The internal then goes into the cutting room. Someone will do the silk recordings, take the silk out, do secondary preservation with an extra type of [unclear], put it in a tub, label it. That internal gets totally washed out, so that there is no cross-contamination with the subsequent tows with anything like plankton left in the tunnel and we get rid of the grease. It goes outside and it vents off for a day, because sometimes it will get a bit stinky. Then it will come back into the little workshop and then it is totally serviced. Any corrosion is taken off and it is all re-greased, put back together, and if we know where it is going to be used next, we put the next silk in.

I: Alright, I don't know if I have any more specific questions. Can you estimate the usual life expectancy of a CPR?

R: Oh, that's a good question. I tell you what, this is the draft, hot off the press, of this year's operations section for this year's annual report. Shall I read this paragraph for the tape? "In 2016, SAHFOS CPRs towed 137,166 nautical miles and achieved a success rate of 91.92% on returned internals." So fist pump for that one, we were happy with that. "This is due to the inherent design of the CPR and to the dedication of the SAHFOS technicians to maintain them. To emphasise on how long-lasting and robust the CPRs are, the CPR 12 (pictured) was first manufactured and used in 1938 and is still in use on our regular routes today." There is a picture of it.

I: That's amazing. 1938 … Okay.

R: Do you have copies of our annual reports?

I: Yeah, I usually download them.

R: I've got some hard copies there for you, the most current one.

I: Great. Can you quickly show me how the preparation of the silk works?

R: I'll show you on video, okay?

I: Okay, fine.

R: That's the better way. We made an instruction video, because we sell the courses and people come along. People come here for the course and they might get back to their own country and they teach other people. So if you teach to a hundred percent, the best you can hope for is that the next person teaches ninety percent, and they teach eighty percent. We are conscious about the watering down. So we made this ebook. It is not designed to be an indicative instruction manual. It's a teaching aid. So we teach them everything and they take their notes as they go along. There are a lot of photographs that go in here. And there all the different chapters in here. Those chapter coincide with the chapters we put on this DVD, which was great fun to make, because we were only allowed one take. We got a volunteer camera man in. And we often joke that we probably got a lot of people in Africa speak with a Devonshire accent. I just move it on a bit … So we start it off with safety. … So here is the silk. This is my colleague with all his safety gear. … We got better because in the end we stopped the guy who was doing the talking and we had someone narrate it a lot better … If they don't do that it'll end up the wrong way in the machine. … And they have the cover silks, which go on top. Tell me when you have seen enough.

I: Yeah, I don't think I have to watch all of that. Thanks. But this was not in this room, was it?

R: No, this was in another room upstairs that has now turned into an office.

I: I was interested in the kind of machinery you have here.

R: The workshop machinery? Yeah, what would you like to see? This is a welder, which will [unclear] the steel rods. We have a big fly press there and a hydraulic press there for straightening things out when they have bashed into the side of the ship. Sometimes you have to strip everything down. A pillar drill, grinding machine, [unclear]. And in the other room we have soldering equipment, we have specialty type tools for the CPR. So when you put the silk in, you have to put wire on this. So we have a special rig and we have a special handle. The soldering is done on the bench in here. And a lot of this is like brass and bronze, so you have to solder and not weld. And that is why people who work here need to have diagnostic skills, they have to be trained in [unclear] equipment examiners, because we examine our own equipment and we sign off legal certificates to prove that the stuff is fit for purpose and compliant. They have to be able to use the [unclear], they have to be able to weld, to drive a forklift …

I: That's a very diverse …

R: Yeah.

I: Alright, I think I am running out of questions now. But it has been very, very helpful.

R: Okay. And then with each of our ships we have a book saying who has examined the equipment before it leaves here. … So that will be the block and that was my colleague's signature. This is the core certificate, the manufacturer says it's good and my colleague said it was good in January. So it is due for a change in June, every six months. And you can do the same for each ship. And if you go to the back you see a picture of the ship to know what we are dealing with. Each book is different obviously. And then the certificate that the engineers give us when they install the davit and examine [unclear]. So if anyone came in and we have an inspection and says "Lance, you are looking after fifteen ships with all this tow gear. Prove that it is compliant." Up here is like the master index that tells you the last time we have visited it, the last time we rotated the blocks and then all the certificates are backed up in those.

I: Okay. How much does a CPR cost? A new one?

R: Well, that's a good question. I could answer it, but I better not do that on tape, because there is … Because we get it manufactured and we sell to other people, and sometimes we sell that with a training package, sometimes it goes without a training package, sometimes we keep it ourselves. So the actual cost depends …

I: So, I stop the record now.

(end of recording)