Transcription of George Newton Interview with Ann Windnagel

Ann:
All right, we are here today – it's April 25th, 2013 – with George Newton, retired chairman of the U.S. Arctic Research Commission; and he currently is acting as an advisor to them. George conceived of the science ice exercise, or SCICEX program, and worked with the Navy to get this going. He currently resides in Cape Cod, and we are here talking to him today. Can you take us back, George, to the beginning of SCICEX?

George:
Well, it is one of those things that emerges from being active in a particular area and seeing an opportunity and being able to exploit it successfully. It starts logically from my early work after retirement from the Navy, where I retired as a captain in the submarine force in 1981; and shortly thereafter commenced working for a consulting professional services organization in the Washington D.C. area, and with a charter from my company to establish a business base in the Arctic and particularly the submarine force activity in the Arctic. That allowed me to talk to a number of people within the government and explain to them the importance of the Arctic to the Navy. As the CNO at that time, Admiral Jim Watkins, had charged the operational forces of the Navy to better understand the Arctic and to prepare to be able to conduct warfare in the Arctic in light of increasing Russian activity in that area.

Among those things that I was able to do was to work for the Naval Space and Warfare Command, which at that time was located in Arlington, Virginia, and subsequently moved years later to San Diego. The challenge, with the broad Navy not having done much in the Arctic other than the Navy's submarine program in the Arctic, was to find out more about the Arctic and what had the civilian science community done and researched in the Arctic that could be made available and used by the Navy science community in improving their [the Navy's] ability to operate there. In other words, it was a desire to better understand the Arctic and not to duplicate research efforts in that area because it was terribly expensive to do that; and therefore was money that the Navy didn't want to expend unnecessarily.

Ann:
That is very interesting, so the Navy came to civilian scientists first?

George:
Well, I was the one who sort of put that idea into the Navy's head, by virtue of my experience when on active duty in the 70's and 80's. Realizing that the civilian science community was doing some things in the Arctic; they were learning of the Arctic. So, when it became an important aspect and all elements of the Navy, the surface warfare, air, and submarine, were all interested in gaining greater knowledge of that area, it was only logical that I offered the

idea that civilian scientists have been active in that area for a long time, and we should exploit that to our [the Navy's] advantage.

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A: Sure, but that was a very progressive idea then.

G: [Laughs] It really was. How times have changed. We are talking about 30 years ago, 1983, 1984. So, the short description of the program that I was working on for Space and Warfare Command – SPAWAR, as it's called, its metaphor or acronym – was "who's doing what in the Arctic?" That enabled me to talk to a number of civilian science organizations: Woods Hole Oceanographic Institution; the National Science Foundation; the Department of Interior; the University of Alaska at Anchorage & Fairbanks, two campuses; the Minerals Management Agency; and in Canada, the University of Calgary, and the Arctic Institute of North America. Those are just a few of them that I consulted and their scientists and their managers.

A: That was a lot of footwork. That's a lot of people to get together.

G: It was done over a number of years, and what I realized, I knew from my experience from the Navy that there was a, I hesitate to call it a distrust, but I think maybe that's the best way to make it clear. The Navy distrusted the science community when it came to employing their resources or enabling them to work within the Navy regimen to collect data because the Navy was concerned that scientists would inadvertently divulge classified information. That'd be bad for our [the Navy's] ability to operate there and understand our true capabilities and our motivation.

On the other hand, the science community was very frustrated with the Navy's behavior because every time there was something that the science community felt could help and understand the aspects of the Arctic Ocean, the Navy, in their words, would put a classified label on it; and deny them access to that information. The answer was simply to get security clearances for researchers so they could better understand what the Navy was doing, and the Navy could also have a greater trust in the scientists working with them.

So it was really, after working with this, that I found that the civilian science agencies were more than willing to give data and reports that they had generated over the years to me, and thus, enable me to review them and pass them on to the Navy as appropriate. But after, after a while, the word I kept getting from the civilian science community is that we can really use the submarine platform as a data collection element, in enabling us to understand, us being the science community, enabling them to understand better what is going on under the sea ice. Not only was the sea ice cover much greater and much broader throughout the year than it is now, but it also offered a significant barrier to understanding except when you are able to set

up a camp: it is limited in size, you had to drill through the ice just to get the thickness of the ice.

There were all sorts of things that were going on, and there was certainly an awareness that the [U.S.] submarine force was continuing regular deployments to the Arctic to maintain its capability to engage the Soviet Union submarine force in that area. And, yet, all that information, like principally, bathymetry, [sea water] conductivity, temperature, XCTD information, and ice thickness, which were routinely recorded on a submarine, were not available to the science community. They were all classified. Well, anyway, about 1986 and 87 as I was working in my Arctic endeavors, the first thought that came to my mind was, "Boy, it would really be nice if the science community could convince the Navy that they could do science from a submarine in a responsible manner; treat the data in an appropriate fashion; and maybe, with some careful work, we [the Navy] could understand how to declassify certain elements to satisfy the scientists' need to publish in professional journals and enable them to continue to expand knowledge of the Arctic."

About that time, I became an advisor to the U.S. Arctic Research Commission – we are talking about 1988 at this time – and through increasing contacts with the civilian science community afforded me by my participation as an advisor to the Arctic Research Commission, I was able to engage the vice president of the University of Alaska at Fairbanks, who was pointed towards me as an individual who could identify a member of the faculty at UAF that could be responsible and understand the need to properly treat classified information. So, it was from that initial discussion that I worked with Dr. Peter McRoy at the University of Alaska at Fairbanks. We developed a program that he would provide a procedure for the submarine going to the Arctic, during which they would collect water samples, and then the Navy would freeze those samples onboard the submarine until it got back to port and we would put them in some form of insulated shipping container and send them back up to Fairbanks to allow analysis; and then, we would work together to declassify the information, so that it could be published.

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A: What was his name again? The UAF…

G: Dr. Peter McRoy

A: Great. And you ended up contacting him because, I mean, why was he qualified or known to be able to create these –

G: You know, I think it was through the understanding of the vice president, the dean of the graduate school and vice president for research at UAF, that he picked out a particular member of the faculty that 1) had an interest in the Arctic and 2) could be made to understand the

importance of classified information, etc. etc. I guess you just pick the right person. That was not a decision that I was privy to but certainly it did form a lifelong friendship as we have subsequently come to know one another better.

Anyway, Dr. McRoy put together a sampling protocol; and it was titled, "The Fate of Pacific Water in the Arctic." In other words, the water flowing north through the Bering Strait migrates around the Arctic Ocean, and his research was an effort to better understand where the water coming from the Pacific went after it entered the Arctic Ocean. We conducted this during an exercise, a classified submarine exercise in 1989. It was in the spring of 1989, the submarine went into the Arctic Ocean, did its research, came out from under the sea ice and its first port of call after that was to be Halifax, Nova Scotia, where the submarine was to be met by one of the members of my team, and [that person was to] repackage the water samples that were frozen, and send them off to Fairbanks, Alaska. As you can imagine, not a short trip at all, from the east coast to well up into the middle of the state of Alaska.

Anyway, the samples were repackaged, sent to Seattle, and between Halifax, Nova Scotia, and Seattle, The Exxon Valdez ran aground. At that point, nothing went north from Seattle by air or any other means for that matter, that was not important to combatting the effects of the unfortunate grounding; and so all the water samples melted; and Dr. McRoy was forced to alter his research protocol, analysis protocol, and work from a different perspective.

A: Right, so freezing wasn't gonna work.

G: [Laughs] That's right. Anyway, from the period 1988, 1989, through early 1991/92 – early 1992, I continued to talk to other elements within the Navy and the submarine force, academic area, and government in an effort to push an idea that, in having a single experiment on a submarine to prove that the science community can handle that information in a proper fashion is a very nice idea; and it helps break down the barrier of misunderstanding, I think is the thing. Here we have essentially an academic community that is much more free and open and working with an organization that is bent on tradition and strict operational procedures; and therefore following direct orders; and it sort of works counter to the way a researcher works, who demands flexibility, and as trends develop, you change the focus of where you're going. A researcher changes the focus of where he's going, or how he's going in a particular direction. So one protocol, one research experiment on the submarine, was wonderful for an initial start, but every submarine is different, every researcher is different, and we needed a broader base to develop a program that could get the Navy the kind of information that it needed; but also help the science community in a significant manner in its understanding of the Arctic, which at that time was almost nil to be perfectly honest, as we learned.

Anyway, then this period between 89-90-91-and early 92, it was clear from a military and political perspective that the Soviet Union was collapsing, some jokingly called it the fact that the United States outspent the Soviet Union and they just collapsed, literally. And with that, we suddenly had a huge Navy that really didn't have a lot of missions that it had to encounter, to take on, to combat what the Soviet Navy was doing. Simply put, we [U.S. Navy] had an excessive number of nuclear submarines that were still fairly young, fairly operational, and therefore, it was a good thing. I looked at it, and said, "You know, we got too many SSNs we can afford without hurting the Navy. If you're going to keep those ships operational, you could dedicate one to going to the Arctic." The advantage to the Navy would be would it would maintain a level of proficiency in an ocean that was all too misunderstood or not understood at all; and at the same time, if it was a dedicated science cruise, you would be able to give science the additional information it was seeking in a more comprehensive, broader form.

And the numerous things that were happening in 1991-92 time frame that were sort of… At that point I had written about it in some professional journals and in some science publications.

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A: You had written about the idea of using?

G: Yeah, the idea of using the nuclear submarine to collect data, dedicated to science, and allow cruises to be made to better understand the Arctic. It was an idea that certainly wasn't so profound that only I would think of it. The Soviets thought of the same thing, I mean, their navy was falling apart, and they were looking for ways to just maintain some semblance of navy submarine force levels; and so somebody within the Soviet government came up with the idea, "Well, why don't we offer a Yankee class ballistic missile submarine to the United States research community and if they will pay us, we would be happy to conduct research cruises for them."

A: Wait a second; we would rent a submarine from the Russians [Soviets]?

G: Pardon me? Go ahead Ann.

A: U.S. Scientists were gonna rent, basically rent a Russian [Soviet] submarine?

G: Yeah, that's basically what the offer was. I participated in a delegation from the United States that went to the Soviet Union, and one of their submarine design bureaus showed us the kind of modification they could do to a Delta class, a rather current class of Russian [Soviet] SSBN. SSBN is the designation for a ballistic missile nuclear submarine. We spent four days in St. Petersburg at a submarine design bureau discussing this aspect, or they were really showing us the various things they could do.

I was a Navy representative, and there were a number of other people from NOAA and Woods Hole Oceanographic Institution. So, the Soviets thought this was a great idea if the science community could come up with multi-million dollars to do that. Well, you know, a million dollars to the science community is, as I'm sure you are aware, big money. That made using a Yankee or a Delta, which would be ideal, [unfeasible]. It's nice for a science cruise because those ships are big and can house a lot of people. That gradually changed into a Victor class submarine, which is smaller and is a nuclear attack submarine that they used during the Cold War. And they started to reengage a consultant here in the United States to try and sell that concept both to the U.S. Government; and also, oh yeah, have the U.S. Government pay for keeping a Soviet submarine operational. Well, they were providing a cruise, one cruise a year or I don't know how many a year; but anyway, this idea, although it was kind of unique, just sort of bothered a lot of us. I think the Navy realized it wasn't the best idea in the world, and it was sort of unethical. We have been fighting these guys for 50 years at that time, well I guess 40 years, and here they were asking us, our defense department, to pay to preserve their war-fighting capabilities.

I think that had some motivation, as I went around and talked to a number of people within the Navy. We would get on this subject, and we would get on the idea many of them were unaware the funds the Soviet's had requested were to come from some sort of foreign navy or foreign military support budget line in our government. Anyway, during my conversations with many people, and I would have to say, without naming them specifically, I must have talked to more than 50 or 60 people with designated appointments to discuss this particular event or concept that I had.

Anyway, an admiral reported in the Pentagon to head the submarine warfare branch of the Chief of Naval Operations staff, by the name of Paul Ryan, and Rear Admiral Ryan had one thing that none of the other Navy admirals [had], with whom I had talked and expressed this idea for a dedicated science submarine: he had a PhD in oceanography and he was also a submarine officer. He was able to see the concept and see the value of research in the Arctic and how it could benefit the submarine force, how it could benefit the Navy, and certainly be a benefit to the science community. He was able to understand what research was and how it was a unique thing onboard a submarine, because he also happened to be a submarine officer.

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A: So he ended up being one of your first advocates?

G: That's right. Well, he was really not so much an advocate; he could command the resources and say, "Let's see if we can make this happen." So, in very early 1992, he said, "I have a submarine, I can get a submarine to go to the Arctic to do a short demonstration cruise with

civilian scientists onboard. The ship will go where the science community requests it to go, within the limits of international law, and that being primarily observing the 200 nautical mile exclusive economic zone as dictated by the law of the sea. So, you can go wherever you wanted to go in the open Arctic Ocean."

By that time in 1992, I had just been appointed as a member of the Arctic Research Commission by President George H. W. Bush; and I was able to get the resources of the staff of the Arctic Research Commission to convene a science planning team: several scientists from the Lamont Doherty Earth Observatory and the University of Washington Polar Science Center at the Applied Physics Laboratory and a couple other places where scientists had already developed genuine interest and activity in the Arctic Ocean.

This science planning team met very quickly. Hastily, I think probably is a more accurate term. From that, a series of research protocols were developed for the various interests of the researchers that were on board and the equipment that could be either installed to support their research needs or modifications that could be made to submarine equipment that would allow it to collect data in a format or a methodology that was beneficial to the science community.

Anyway, we got that done. The first cruise was executed in 1993 on the USS Pargo. The submarine spent 19 days under the Arctic sea ice; and for the first time ever, the science community had a synoptic view of the Arctic Ocean. It was a broad view because the submarine made several transits of the extent of the Arctic Ocean from the North Pole to the south and west towards the Bering Strait and back toward the Fram Strait. The submarine came from the Atlantic and left the Arctic Ocean via the Atlantic.

A: George, this is also the first time that civilian scientists were allowed on a submarine as well.

G: Absolutely, and the other side of this hasty get research protocols together and plan a cruise, was we had to get all these scientists security clearances in a reasonably short period of time based upon when compared to the traditional period of time it takes to get a security clearance. Background investigations that are necessary for those things, even at that time, they're extended now, but they were pretty lengthy at that point, also.

Anyway, here we had what the executive director of the Arctic Research Commission at the time, Dr. Garry Brass, said was a "blind date". The organized, strictly-by-order Navy was meeting with a flexible research community, and we're gonna see how we could mutually get along to improve the operational performance of the Navy in the long run and the knowledge of the Arctic Ocean under the sea ice for the science community. And we proceeded on; the cruise proved to be executable and like everything the first time through, there were some areas that we thought we had to work on a little bit, or the Navy had to understand and the

science community had to understand as well. The way a submarine operates, the orders that a commanding officer has, the absolute authority of a commanding officer on a ship, they're all things that were new to the research community and the fact that you have a group of scientists on board that were being forced to live in a crowded submarine environment quite different from living onboard an ice breaker or any other research vessel at sea because there's space, there is open air, there are a lot of things that are quite different for both sides.

The success of the cruise and the information that enabled science to have not only, as I say, a synoptic view but not of just one parameter but of a whole host of parameters – CTDs (surface to several thousand meters), ice thickness, bathymetry, location, fairly accurate location, although navigation under the sea ice is a bit of a challenge. There was a lot of information – water samples that could be collected. So, we had co-registered data sets, which really were, I think, not fully appreciated when we set out; but shortly after the cruise got started, the people on board could quickly cross reference what they saw as unique to what other scientists, and I think there were six scientists on board, what the other scientists looking at some other parameter [saw]. They could see and better interpret the events of the unique things that they were having an opportunity to understand.

Anyway, story long, ended here, the cruise was sufficiently successful enough, there were enough writings of the senior scientists on board and other members of the science team describing the success of the cruise and what went on during the cruise. Because we were able, because the cruise was done with scientists onboard, many of the parameters, the location of the submarine, and everything were quickly able to be declassified. After the conclusion of the cruise, in 1994, from an administrative perspective in Washington, with the assistance of the Office of Naval Research, we were able to draft a Memorandum of Understanding between the submarine force Atlantic fleet, the Pacific fleet, the Chief of Naval Operations staff, the head of the National Science Foundation, the U.S. Coast and Geodetic Survey, NOAA, I think that's, I think 7 signatures, and the Arctic Research Commission. There were 8 signatures on that, agreeing to a procedure by which these cruises would be conducted.

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A: And thus SCICEX began.

G: And thus SCICEX started. And the acronym was created. The MOU called for regular cruises once a year, in the spring time generally, late winter/early spring, for cruises by a nuclear submarine under the sea ice to be planned under the auspices of direction of the Navy's Arctic Submarine Laboratory in San Diego. They went on from 1995 through 1999. Five cruises, they allowed collection of the expendable CTD [profile data as well as] a lot of bathymetry. We also found in the XCTD's, to the benefit of science and the submarine force because they use that

information as well under sea ice, that the descent rate for the XCTD was in error. I can't tell you exactly how that was determined, but it was proven later at the manufacturer's plant that the pressure switch was inaccurately designed.

Anyway, that program lasted 95 – 99, and worked with great success. Many people in the science community still are involved directly or peripherally in [using] the information that was collected during those cruises. At the end of 1999, many of the submarines within the Navy submarine force had, well, they'd become too old and they were retired; and the number of submarines available to do this kind of dedicated cruise really evaporated; and therefore, the science community was forced to sort of retrench. What we did, in 1999, is rewrite, or write a new, Memorandum of Understanding. The participants on the science side were a little bit modified. But, nonetheless, with the rewriting of the MOU, we talked about the possibility of dedicated cruises; but it also had an appendix that talked about a Science Accommodation Mission which was even at that time in 2000-2001 was viewed as the most likely way, in view of the decreasing number of assets in the submarine force, the most likely way a cruise would be conducted. In other words, a submarine would go to the Arctic on an operational mission and for certain periods of time without scientists on board would collect various elements of scientific data and make them available after a period of time [and] after declassification to the science community.

And that has proceeded with some fits and starts, starts and stops, as time has worn on. We initially had several cruises collecting some data over a period of 1-5 days in the Arctic, and it was subsequently made available. I think there were four cruises or three cruises conducted between the year 2000 and the year 2005, and then again assets were being tightly constrained, budgets were decreasing within the Navy, the Navy was not as readily willing to extend a lot of resources in supporting this program because they had more important things to fry and those things were dictated by national defense plans and readiness for the Navy in general. So in 2005, the Navy requested that the science community prepare a science plan, and over the period of really about two and half years, because it was all being done pro-bono, nobody in the science community had money to support a scientist's time to come to Washington to draft a report, or not draft a report but to draft a science plan and work to get it approved and agreed to by the Navy.

Navy's Arctic Submarine Laboratory was instrumental in providing the operational perspective for preparation of a science plan and the scientists went through very carefully in developing various scenarios in what they would desire and priorities. Anyway, the science plan got published; I bet you it's on the SCICEX website.

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A: It's a little bit of a labor of love then to keep it going.

G: [Laughs] Well I think that's a very accurate description, and it has helped very much. One of the prime motivators in this science plan effort, and the subsequent planning methodology that has gone on since the year 2000, has come from the Army's Cold Regions Research and Engineering Laboratory in Hanover, New Hampshire. It always is helpful to have somebody who's got a steady paycheck to be able to devote a little bit of extra time to the preparation of these events. And Dr. Jackie Richter-Menge has been instrumental in pushing the science side of this effort along with the Arctic Research Commission who has funded an awful lot of travel to enable researchers to come together and meet with the Navy and discuss the development of this plan.

Anyway, the plan was completed in, I would say, 2009 or 10, and by this time Arctic deployments of the U.S. Navy submarine force had decreased from, I would say a little – if you had researched over a number of years from 1950 and 1999, the Navy probably conducted on the average one and three quarters Arctic deployments every year, and these were all operational except for those 5-6 little SCICEX cruises that I talked about earlier. Anyway, so now the Navy is doing an Arctic deployment, maybe one a year, maybe one and a fraction as a submarine conducts an inter-fleet transfer from one coast to the other, for overhaul or reassignment of a home port. I would say one a year and even less, and I don't have any figures to back this up. I'm just using my quick mental calculation. But from a research perspective, and I'm talking about classified Navy research, submarines are only going to the Arctic once every 3 years. So it has been, and if the science plan had been done a little bit sooner we might have gotten another cruise, but anyway in 2011 when the Navy had an ice camp in the Arctic and a submarine was in the Arctic working with that ice camp to perfect various military systems. They also provided some support and dedicated a period of time to data collection on what is called a Science Accommodation Mission or a SAM, S-A-M, and so the program has been reenergized and as I say it's through the good offices of Arctic Research Commission and the Army's Cold Regions Research & Engineering Laboratory that has enabled all that to happen.

And that's really where we are today, we have an annual meeting of the Science Advisory Committee that reviews the events from the past year, reorients the important priorities of the science plan as appropriate. The science plan is drafted with some flexibility to allow such reorientation. And so we end up, this is where we are today, I've got to say for the purposes of the recording I think you are well aware, Ann, the Arctic is still an unknown ocean when compared to the Atlantic or the Pacific or the Indian. There's still a tremendous amount we don't know, from a science community perspective it has been frequently and repeatedly impressed upon the Navy that any information scientifically collected, carefully collected, in the

Arctic Ocean and made available to the science community from its Navy supporters in the submarine force, any information is in great value to the understanding of the Arctic. So there you have it.

A: Thank you, George, for sharing the SCICEX history; we really appreciate your time. Once again, George Newton, current advisor to the U.S. Arctic Research Commission giving the history on the SCICEX program.

G: Ann, it's been a pleasure.

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