

Cruising the Labrador, or LORAN in 1941-1942: A Memoir¹

Alexander A. McKenzie

Editors' note: Alexander A. McKenzie was a radio engineer in service to the US Navy in 1942 when he went to Battle Harbour, Labrador, to help bring its newly-established LORAN station into operation. This memoir describes how, despite difficulties, this was accomplished. It also presents an useful description of the way in which Canadians, Newfoundlanders and Americans worked together under wartime conditions. McKenzie graduated from Dartmouth College in 1932 and spent a summer working as a hutman with the Appalachian Mountain Club hut system in New Hampshire's White Mountains. Partly on the basis of this experience, he was subsequently chosen to serve as the radioman at the Mount Washington Observatory, which was scheduled to be manned early in the fall of 1932. With the cooperation of Dr. Charles Franklin Brooks of Harvard, a grant from the New Hampshire Academy of Science, and many contributions in cash and supplies, a crew of three weather observers (including a licensed radio amateur, WIBPI) was recruited to man the station on the summit, 6288 feet above sea level. The success of this venture (including measurement of wind gusts of 231 mph on April 12, 1934) insured the continuance of the Observatory. McKenzie transferred in 1935 to Harvard's Blue Hill Meteorological Observatory and was later given a year's leave of absence to assist with radio equipment in balloon-supported cosmic-radiation telescopes under Dr. Thomas Hope Johnson, whose work was funded by the Carnegie Institute of Washington. By the beginning of 1939, McKenzie was working for the Yankee Network, a regional radio system that was experimenting with frequency-modulation broadcasting. This took McKenzie back to Mt. Washington, to the network's forty-Mhz experimental radiotelephone station. In March 1939 he left this position to assist in the installation of the world's first high-power (eventually fifty KW) FM broadcast station at Paxton, Massachusetts, on the outskirts of Worcester. McKenzie was married the next month.

I continued at Paxton until about 2 PM on Sunday, December 7, 1941, when I found myself, in common with many other young men, on the verge of extensive travels, although no one at the time realized just how lengthy. In my case it took almost a year

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to find out. I first had to decide that I did not, after all, wish to become a US Navy officer. Yet the civilian alternative — working part-time in government service — did not make a great deal of sense. Fortunately, my good friend Henry Southworth Shaw was able to steer me into a job I could do — perhaps rather well — with a branch of Radiation Laboratory (RadLab), an offspring of the US National Defense Research Committee of the Office of Scientific Research and Development. Moreover, it was a job that would spare me the boredom of learning a new way of life in which most activities were subordinated to a military code. While Mr. Melville Eastham (who was on partial leave from General Radio Company in Cambridge) received me as an old acquaintance, he would tell me nothing about the classified work I would be called upon to perform. Instead, he sent me to the first floor — where I had already begun working — to discuss details with Mr. Walter L. Tierney, boss of field operations. Ironically, both Eastham and Tierney seemed most impressed, not with the fact that I was currently employed as a Radio Operating Engineer at the world's most powerful frequency-modulation broadcast station (which I had helped build), but that I had acted as the contractor for a modest home to which I added some personal sweat and energy in wiring, plumbing, and similar chores.

The facility where I began working was the former Hood Creamery building on Massachusetts Avenue in Cambridge, just on the wrong side of the railroad tracks from the main campus of MIT. "RadLab" was an offspring of the US National Defense Research Committee of the Office of Scientific Research and Development. If pressed to identify ourselves, we simply said "OSRD." Few knew what it meant, but most were too embarrassed to ask. For top-level identification, we said "NDRC." When we thought it might help, especially in dealing with the Navy, many of us added the legitimate "US." When spoken rapidly, it sounded as if we might be saying USN (which everyone recognized) with a few fancy letters to dress up the identification. In written form, our identification with the Navy — for whom we initially worked exclusively — was quick and meaningful.²

When I joined RadLab, it was putting together a powerful pulse transmitter. I soon found that the work held no terrors for me. As well, I discovered that the somewhat motley crew with whom I was working were not only generally compatible but also either people of whom I had heard or old friends. Chief among them was John Alvin Pierce, with whom I had much in common. Jack treated me as a peer, but was beyond all of us in wisdom and ability.³ Among the personnel were some Canadian sailors, including two "Killicks" (Leading Seamen), Jack and Art, as well as US Coast Guardsmen. This was the group that would eventually operate the large pulse transmitter we were somewhat laboriously assembling. The big, ungainly units had been manufactured locally, but constant improvements were the norm rather than the exception. As we worked, we learned the equipment's idiosyncrasies. We knew that once we got the equipment into the field, it would be imperative that we all cooperate to keep it working.

Similar prototypes had proved that LORAN (Long Range Aid to Navigation) worked. LORAN used a specialized method of creating high-power radio signals. Transmitted radio pulses would generate specially controlled lines representing latitude

and longitude on a cathode-ray tube in the receiver; the electronic intersections could then be plotted on conventional charts. Moreover, a ship's navigator could receive and apply this information without emitting radio signals that might reveal his ship's location. It was the ancestor of today's more sophisticated navigation technology. But at that time it was all new and experimental, and we were trying to provide accurate information to convoys across the North Atlantic. Canadian naval personnel were to operate the ground transmitters at each end of Nova Scotia, while US Coast Guardsmen (now under the Navy) manned stations in the US, as well as in Newfoundland and Labrador, where the government was reluctant to allow Canadian personnel to act.

To develop the system, we moved a large crew into a formerly quiet hotel near the lower tip of Nova Scotia, where we began to receive signals from a Quonset hut a few miles away. I was suddenly declared an expert and trained in the final measurements and fancy bow-tying necessary for a finished LORAN station. As a result, I was sent to the vicinity of Canso, where I did what I could, before being recalled to Cambridge for more training.⁴ The next pair of stations, already under construction, was to go somewhere "way up north!" This I soon learned (for Mr. Tierney felt I should make plans to go) meant Battle Harbour, Labrador, and Bonavista, Newfoundland. Fortunately, Navy Commander MacMillan had been attached to our Division. He was an erstwhile leader of annual summer expeditions to the north who was now in uniform and attached to RadLab, although he was available as a valued consultant to any Navy project.⁵

By then it was October and ice would soon block access to the northern coasts. My immediate concern was therefore to equip myself with adequate clothing for the venture, which I hoped would last only long enough to get me in and out before the ice blocked retreat. Captain MacMillan — "Captain Mac," as he was known to his students at Bowdoin College — clearly savoured the opportunity to help an earnest, attentive young man who presumably might be impressed with the need for adequate preparation. He was therefore most gracious. "Well," he began, "when you get to St. John's, you'll want to look up the Murphy girls on Water Street. Anybody can tell you where they are. They'll make you a couple of pairs of mukluks."⁶ His description of the care with which these sealskin boots were constructed suggested a longer stay than I had hoped. The conversation led circuitously to other garments to keep out the cold and wind. I did not wish to seem unappreciative, but truth is generally the best course. "As a matter of fact, Captain MacMillan (giving him his courtesy title as first officer), I do happen to have some cold-weather, more or less windproof clothing that I have worn on Mount Washington. Do you think that might suffice for the short time I expect to be in Labrador?"

Captain Mac's warm smile of comprehension was my acceptance into his august company. Of course, anything that had been adequate on "The Mountain" would be fine. We had solved my problem and he could relax to tell me of his summer visits to the Glen House area and his runs up Mount Washington.⁷ Although he lived for many years, I never encountered him again. The memory of his friendly, weather-beaten face beaming at me across the table in Walter Tierney's office is still a bright spot in my life. Not so

pleasant was the eventual realization that I was heading north at a time when neither the Lab nor the Navy could guarantee that I would return in time to welcome my second child, due in early December. When my wife Barbie and I finally realized what should long ago have been apparent, we cried ourselves to sleep in each other's arms.

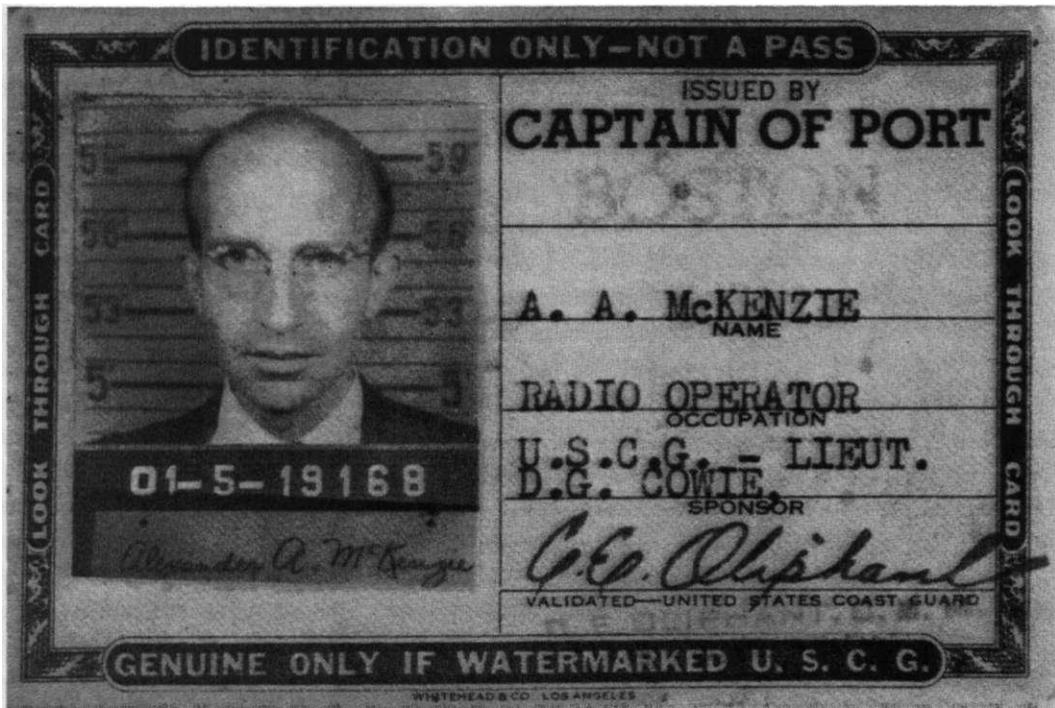


Figure 1: Battle Harbour, Labrador.

Source: Courtesy of Provincial Archives of Newfoundland and Labrador.

Tierney liked situations that were ostensibly under control. His standard challenge was "Give me the paper!" His hand was outstretched and his fingers made an unmistakable in-gathering claw. We were required to provide written receipts (including a discount should the purchase be made in Canadian currency!). What he now asked was my assurance that I would arrive first at Battle Harbour.⁸ These were qualified by my faith in my oral abilities and the limited knowledge I had of the Navy brass available to his importunities.

Next, Tierney began to discuss what sounded like "Alice Knobbs." But there was no lady involved. Rather, he was referring to the Atlantic US Navy Observer at Halifax (ALUSNOB HALIFAX), an officer who had already proved himself a true friend in several sticky situations. Perhaps he enjoyed the strange, but probably important, venture to which he had already contributed.⁹ ALUSNOB's first assistance (he had already reserved a suite for me at the Nova Scotian Hotel) was to direct me to a reliable dentist to replace a large filling that had come out of a tooth in the dining car of the CN train the night before. In any case, my faith in ALUSNOB was so convincing that Tierney sent me off to Halifax loaded with more things than I could carry and equipped with a letter that probably indicated that any service rendered would be a contribution to the war effort. Later, other hard-nosed Navy officers pointed out to me that my lack of "orders" was inexcusable. "No one travels anywhere without orders, Mr. McKenzie!"



Note: A. A. McKenzie.

Source: Courtesy of the author.

There were some 1000 pounds of test equipment and parts somewhere in Halifax awaiting pickup by RadLab personnel, all of which had to be sent to Battle Harbour. ALUSNOB made a wry face when I explained this to him. He had hoped he could send man and gear north in a light plane; instead, the weight meant that all would have to be sent by ship. What ship, and when? Commercial travel from St. John's to Labrador was extremely limited and apparently the schedule was either unknown or impracticable.

Meanwhile, I gathered my gear, which was lodged in His Majesty's Canadian Dockyard. Access was guarded by the RCMP, but they were friendly and cooperative. Expecting to spend the better part of a day gaining access, I was almost dazed to find myself suddenly with an unimpressive piece of RCMP cardboard that later proved one of my handiest passes. Perhaps my Highland Scots patronymic sped the process. Once inside, friendly Canadian Navy personnel helped to move, unpack, check, and repack the half-ton of electronic goodies. Unfortunately, it was discovered that in repacking the gear at Canso several weeks earlier, damp wood shavings had been used and some of the equipment was corroded or otherwise damaged.¹⁷ The best was made of a bad situation. The repacked gear was put in dry excelsior to await the naming of a destination.

One humorous episode intervened which had nothing to do with secret electronics. American state and national elections were approaching and Massachusetts law made full provision for people like me to vote *in absentia*. Of course, ALUSNOB had to be consulted for details on how to do this. It was soon clear that there was a specified time frame for getting the ballot in. Yet during wartime, foreign mail leaving an important port like Halifax was censored. If the ballot were simply mailed, it would be "tampered with" according to Massachusetts law. Nor could we expect Canadian censors to be "nice guys" and let it go though uninspected. Indeed, this was neither sought nor offered. A fairly simple procedure, requiring the cooperation of postal officials, eventually allowed me to open my ballot material within the Censor's section of the Post Office. Under the eyes of two inspectors, who were unable to see where I placed my "X," I marked my ballot in the prescribed fashion and was allowed to fold and seal it, purchase and affix a stamp, and have the stamp cancelled. With a rubber stamp, the Censor affixed his mark. After such a complicated procedure, it was a relief to learn that my candidates won!

One heavy burden during these activities was the briefcase in which I carried all my important papers. Among them were two sets of Ozalid drawings of complete LORAN stations, one for Battle Harbour and the other for Bonavista.¹⁰ The RadLab representatives already at these stations supposedly had at least a set each, but Tierney never lost an opportunity for duplication. Consequently, when I had some free time at the hotel, I reviewed this material and separated the packages for later delivery. These were all marked SECRET and I found their importance to be a heavy burden. The packages could not safely be left at the hotel or any unsecured place. My own papers, including a laboratory notebook with numbered pages, bore less important information, but would contribute — if stolen — to a comprehension of the new system. In fact, the only safe place for the briefcase was in ALUSNOB's safe. He very kindly stored this material several times, when carrying it around seemed almost more than I could stand.

The burden of these packages was not only psychological but also physical. Because we knew that sea voyages would be necessary, a large metal plate had been cut to the case's inside dimensions. Should the ship founder, I was to find a discreet way of throwing it overboard. Since an iron plate might allow the material to be retrieved easily with magnets, the metal plate had been made of brass. I even warned my military and civilian companions that if we were torpedoed, the case must be dropped overboard if I were incapacitated. In retrospect it all sounds melodramatic; at the time, we were fighting for our lives and such precautions seemed perfectly sensible.

Finally the call came to report. ALUSNOB was all smiles; he was going to be able to shift the load! I was to take the sleeper that night for Sydney, where a former Coast Guard lieutenant was to meet me with a small crew to unload my baggage; he would also supply any necessary information. The Canadian Navy group at the Dockyard was quick to drop everything to put the finishing touches on the load. Every wooden box was clearly identified and all eleven were carted into the adjacent railway express area. I inspected the express car: my boxes were to be loaded up front so that they would not be moved before the final destination. Back at the office I arranged payment, only to

discover a problem. It seemed that there were only ten boxes! I therefore climbed back into the baggage car and began to count. Though I had been charged for eleven boxes, the actual total was only ten. Time has obscured what happened next; I only remember that before I was willing to release the baggage car, I had eleven boxes.

My sea-going career began in the middle of the night, when the Halifax train was ferried across the Gut of Canso while I slept peacefully. The next afternoon about dusk the train arrived at Sydney. It was like being royalty. The Coast Guard lieutenant's crew removed the boxes and stored them in a safe US depot, leaving me to cope only with my briefcase. Someone else carried my suitcase and oversized duffle bag, which contained a sleeping bag, several heavy shirts, trousers, and various other protections from the cold. An adequate room and a place to eat were available and I had only to wait for further orders. No specific information was forthcoming and none was requested.

Walter Tierney had opinions on, and solutions to, every possible problem. While his cash advances had been miserly, he called every week to exhort me to file an expense report and to request more cash. When he sent me north, he advised me not to take any traveller's checks or intrinsically valueless paper. "Where you are going, you'll want cash. You are not going to be near banks." Accordingly, he had given me a cheque for US \$500 at the start. This I converted into about \$300 in bills no larger than \$50 and bought big Canadian bills with the balance, to the tune of about \$220 Canadian (the US dollar then traded at about a ten percent premium). Awaiting me at Sydney was a money order for another US \$300, which I converted into \$330 Canadian. My wallet, which I carried at all times, generally in a work-shirt pocket over my heart, was another hefty burden!

Everything possible seemed to have been attended to. With no chores, and my briefcase entrusted to the safekeeping of the US Navy, I proceeded to walk the streets of Sydney, looking for things to do. I visited a radio station with "studio" on the main street, but found it uninspiring. The young man in charge was friendly but a bit confused by the visit. He had never heard of frequency modulation, so an exchange of technical information was neither possible nor desired!

The next evening, I ate as usual with the lieutenant. Conversation was always a little stilted. The Coast Guard/Navy presence may have been based on sonar experiments, which I suspected were highly classified; I thus carefully avoided any mention of the topic. His own instructions were to say absolutely nothing, especially to the Navy, about LORAN. Even the name was classified. After conversing for a few minutes, the lieutenant looked at me quixotically and said, "You'll be going aboard around 8:30 tonight." Not knowing what else to say, I asked if all my gear would accompany me. "Oh, yes, it has already been stowed away," the lieutenant replied, smiling. The rest of the meal was more relaxed. The lieutenant provided a few bits of specific information which were generally meaningless because of my ignorance of local geography. Finally, I was escorted aboard a rather small warship, a Canadian Flower-class corvette, HMCS *Arrowhead*, and introduced to Captain Skinner and several of his officers. *Arrowhead* was tied up beside HMCS *Hepatica*, which would also convoy three cargo ships "north."

I soon realized that I was being favoured by unusual hospitality — unusual to me, at least. A real old "last night ashore" drinking party was in prospect — it was probably too late to stop it! — and here was this teetotal Scots/American the centrepiece of the informal group. Captain Skinner and his "Jimmy," Mr. Higgins, who were both from Newfoundland's west coast, were chunky gentlemen whose gold braid after years of service was tarnished by the spray from the Gulf of St. Lawrence, the Strait of Belle Isle, and the rough coast up to Goose Bay. Both were Royal Canadian Navy Reserve (RCNR), while the younger officers were RCNVR (Volunteer Reserve). The latter were known as "the wavy Navy" because of the pattern in which their gold braid was laid on. The skipper of *Hepatica* was a tall, Ontario-type, like Skinner a full Commander in the RCNR." He was eager to discuss his latest reading, which happened to be *Reveillé in Washington*. Skinner, who told me later that he had taken him under his wing, recognized how difficult these rough convoys were and urged him to live it up a bit whenever he had the chance. It was a tough life that was simply impossible for a civilian to appreciate. Both captains accepted my explanation that I had sworn not to touch alcohol during the war, especially since I was travelling alone so much. A soft drink was quickly placed in my hand, and by dint of careful sipping it managed to outlast a number of more potent libations consumed by the officers. Nevertheless, as the general level of inebriation rose, I found that my own inhibitions likewise became less burdensome. The result was a perfectly moral "high" at a rock-bottom price. It was a memorable occasion!

Came the dawn, and I had slept neither long nor soundly. There is a great deal of noise on a metal ship and I was half afraid of rolling off the bench outside the Captain's cabin, which was my bunk for the trip. The rain had stopped, but the sky was lowering and the day seemed unfriendly. I was brought to full consciousness by the attempts of a young lieutenant to awaken the Captain. "Captain Skinner, sir, it is time to get up." Then something about another officer and perhaps some ceremony at which the Captain should participate. Captain Skinner merely grumbled; the more the lieutenant insisted, the lower and louder the growls that emanated from the superior officer's throat. It seemed apparent that the lieutenant had other duties and since it was morning and perfectly reasonable for anyone to awaken, I would rouse the Captain. And so I told the young "Subbie." Being nearly fully dressed, I rolled off the bench and came over to where I could address the skipper in full voice. The lieutenant thanked me and departed swiftly. A strange voice urging him to rise seemed to enrage the Captain. Although I recognized immediately that I had assumed too much friendship on short acquaintance, I was now stuck with upholding the honour of "my" ship and was prepared to suffer even body blows to insure the status of *Arrowhead*. When he was getting to the point of arising, he let out a couple of good curses at the American, ending with "Pack it up!" His outer clothing proved a struggle, but the Captain eventually got them on.

By the time Skinner got to the deck, the corvette was in motion, but he was in plenty of time to salute the harbour master, or whoever needed a salute. He held the salute, looking tougher every minute, and ignored his impressionable civilian guest as *Arrowhead* moved swiftly northward toward Port-aux-Basques on the southwestern tip of

Newfoundland. But if that were our destination, we never reached it. The overcast was thickening and a light rain had started to fall. At some point in the course of an eventful journey, or afterward, it may be fun to say, "Well, what if we had not turned here or there, or it had not rained...? I wonder if we might have...?" Thinking back over what happened and when, I have always been thankful that my trip to Newfoundland did not involve the conventional public transport from Cape Breton. One of the ferries was "fished" by a German U-boat at roughly the time I was making my trip. "But," Barbie always points out, "It didn't happen, did it?"

With Captain Skinner in charge and the moisture making the deck unpleasant, it seemed time to investigate the wardroom to see what the officers were getting for breakfast. It looked appetizing, and tasted fine, but there was a certain roll to the ship that began to seem unpleasant. Canadian friends had already warned me that a corvette has one more rolling motion than other ships, but this did not seem an appropriate time to investigate. It was a little close in the wardroom, so I went back on deck. The rain was not all that bad, but as *Arrowhead* left the relative shelter of the harbour, it seemed as if other facilities should be visited before too many forms of motion took effect. Accordingly, I spent most of the day moving from one place to another and enjoying none. The days begin to blur as the wind picked up and the corvette pitched. Various bulletins reached ears through a haze of timelessness. Of the three cargo ships in convoy, two were unable to make significant headway and had to be escorted back to Sydney by *Hepatica*. *Arrowhead* pushed on with the single merchant ship, and *Hepatica* eventually caught up, only to escort merchantman number three back to Sydney. *Arrowhead* forged ahead alone. Why? Not on my account, I hope!

At any rate, eventually *Hepatica* rejoined *Arrowhead*, the weather improved, and I reappeared on deck. Nobody mentioned food, so I stayed there. It was cool, but the wind can do wonders to a fevered brow. We could now see the low hills on the west coast of Newfoundland. The Captain pointed out various outcroppings, islands, and other points of navigational interest. He even drew our attention to a whale. Accustomed as I was to the Irish, Italian, and Greek quips of Central Square in Cambridge, I was smart enough to know when I was being put on. But this really was a whale, albeit rather smaller than newsreels led me to expect. Finally, we entered the Bay of Islands and the Humber Arm. After the open Gulf of St. Lawrence, the Arm was like a glass stream. Lights began to appear: not only the artificial illumination of a community but also many open fires. Remembering an article on backyard iron smelting by Russian peasants (was that it?), I wondered if these hardy people had seized upon some equally patriotic project.

As we approached the big dock of the Bowater Pulp and Paper Company at Corner Brook, and the chores of running the ship fell away, the crew became more eager to make comments and explain things. The open fires were for Guy Fawkes Day; it was November 5, 1942. You know, "Please to remember the Fifth of November...gunpowder, treason, and plot." The crew enjoyed the pleasures of "Little Toronto" and the old folks made a tour of the impressive Bowater mill.¹² The Routing Officer, everybody's old friend except mine, was a personable young man whose membership in a club allowed all

officers and civilians with neckties to enjoy a nice meal.¹³ I felt more welcome when I discovered the RO's lady was an American, although he identified me as Radiation "Labboratree," in deference to the Canadian English to which he had been subjected recently. The lady was consumed with curiosity about why a civilian was on a Canadian warship heading north. A first encounter with a pretty girl can be disarming or confusing. Besides, her husband would probably tell her everything he knew as soon as we left. "But, where are you going?" was quickly answered by gallant Captain Skinner. "We have orders to put him on an island (true) where he will be surrounded by dogs (a safe bet)." Laughter, and the subject was dropped. Skinner knew his way around.

Next morning, we went down the Humber Arm towards the Bay of Islands with *Hepatica* to pick up a cargo boat loaded with lumber for the big airport construction job at Goose Bay. There was a stiff breeze blowing. The cargo ship was headed south. All day its skipper tried to put it north, but he was always afraid to take the wind abeam. We battled our way around the Bay of Islands all day with no result. Everybody was tired and cross when the cargo ship finally limped into Lark Harbour and dropped anchor.¹⁴ A war council was held and the skipper invited to meet with the Canadian captains. Skinner had sent a signal to Ottawa and received a decision. The civilian skipper complained that his load had shifted and he could not bring his ship about until he had a chance to work on it. But receiving an ultimatum, he agreed to be ready the next morning. He was and we proceeded north.

Sailing was never done in a straight line, which was too dangerous because of the threat of submarines. When they gave me the little life belt I wore the whole time, I was warned that should we be "fished" I would have twenty seconds to get clear of the ship. According to established schemes, the ship would tack first in one direction and then in another. How they kept track of each other seemed to me difficult. For instance, at the end of one pretty good day, as the watch on *Arrowhead* was about to change, it began to snow and the watch officer lost *Hepatica* — one instant it was there, the next instant it was gone. The watch officer was stuck for the best part of an hour before the other ship suddenly reappeared as the snow let up. That night I enjoyed watching the iridescence of the water as it swirled beside the ship. This would be my last night. They would probably proceed beyond my destination during the dark, and then put about to deliver me in daylight. They were unfamiliar with the coast near the shore, among small islands. I had no charts and had never been there before. That night, I slept.

The sun felt good when Captain Skinner awakened me. They had passed Battle Harbour in the dark and were now back near there. "Now, what do we do?" they wanted to know. My business contact was Stanley Brazzell, the operator of the Marconi wireless station. By the time I got on deck, the sight of our rather large craft had attracted a couple of fishermen in a small boat. The officers were trying to get some navigational information — shoal water and the like — and apparently did obtain some useful bits, but the men either did not know about the new radio antenna or did not understand that we were looking for it. They were given a couple of cartons of cigarettes and they took off. I suggested that a signalman call "Brazzell" on the ship's horn in Morse code. The

difficulty was that the sound was not a clear, unwavering note, but the more marine siren-type sound, with each Morse character rising in pitch, both within a letter and as the number of letters increased. The signalman had no particular problem after a few tries, but it was hard for me to copy at first. The ensuing racket echoed from the low hills and soon a small motorboat approached at good speed. The driver wore a visored cap and proved to be the Newfoundland Ranger stationed at Battle Harbour. He seemed concerned by the sight of the ship and I believe he was relieved to find we were in no trouble. They shouted down to him my query for Stan Brazzell and he left to get Stan as soon as he realized that my baggage would more than fill his own little boat.

By this time, *Arrowhead's* crew had most of my gear out of the hold and were awaiting arrival of the larger boat. Captain Skinner suggested that we make good use of the time by getting me some breakfast, a circumstance I had overlooked in my excitement at finally reaching my new home. The minutes sped by and I was soon saying goodbye to all within hearing distance. The sailors seemed pleased, perhaps with themselves or in getting rid of a possible Jonah, but it was a friendly parting. It took a little while to make out Stan's dialect over the noise of his labouring engine, but there was nothing complex about getting the load to the high dock that had been constructed for handling building materials for the station.

Bill Vissers and Clarence Henson were the RadLab representatives but there were also a number of disgruntled Canadian contractor's men anxious to get home and unhappy that the ship that brought me could not pick them up.¹⁵ Captain Bradley and some of his sons who were employed at the station were there when I arrived, and the elder man and I spotted each other. He lived with his wife and unmarried sons on Caribou (later known as Loran) Island a couple of miles away. His dogs followed Captain Bradley back and forth from home to station. It seemed true but unfortunate that these semi-wild dogs were unreliable and in some cases had been known to attack and eat unguarded children. If this happened, it was customary to destroy all the dogs in the pack, if they could be apprehended! The Stevens "boy" who helped Bradley told me: "Mr. McKenzie, sir, you kicks dem in de belly."¹⁶ When I asked him why I should do that, he replied: "It hurts dem de most, dere." I usually had a stick with me if I strayed very far from the crowd. The dogs watched me from a distance during my usual morning evacuation near the beach and quickly moved in to gobble up what I had left. They were permanently hungry.

For Vissers and me, getting down to business was the important thing. He had put the station together as far as he was able, but had been instructed to await my final touches. We agreed that I had been sent to carry out a certain standard testing and procedure. After that obligation was satisfied, we would put the station on the air. The reason I qualified my actions to Bill was that I was unsure that my test equipment had survived the careless packing at Canso. I tried my best to set up the standard measurements and recorded my results, but I had no confidence in them. It was my intention to bring back to the Lab the measuring element I most questioned to try to convert my test figures to more nearly correct numbers than might be obtained by extrapolation.

Bill helped me do everything according to my instructions, even when he questioned both the method and the reasons. As I remember, everything worked. Bill, whose field experience was superior to mine, went at things his way. Employing methods I could certainly approve, he increased the received signal strength significantly. Again, everything worked, but much better! So we put the station on the air and commenced transmissions. Months later, I heard how happy Jack Pierce, back in Cambridge, was to see our pattern of pulses blinking away.¹⁸ We blinked when we knew or suspected that the critical timing assigned to pairs of stations was incorrect and therefore would be misleading to a navigator who might be using these primitive signals.

There was now opportunity to enjoy the country. For the first time, I saw all the colours in the Northern Lights. One Sunday afternoon, we were invited over to Bradley's for tea. Entertainment was provided shooting at targets with rifles. Then, Mrs. Bradley served us "bakeapples," a raspberry-like fruit also called cloudberry. They had been preserved and had a faint, pinkish colour. Mr. Bradley was a retired sea captain and a man of distinguished manner — a natural leader. I wish we might have had more time together. Once, he delivered himself of a pronouncement, an infrequent occurrence. Pointing to my Mt. Washington parka and storm pants, he said, "This man has the best outfit." Certainly, compared to the skimpy clothing that Bill and Clarence had available, the old B.F. Moore suit from Newport, Vermont was superior!

One day, the Newfoundland Ranger showed up and wanted to take us to the hospital at Mary's Harbour, an outpost of the famous Grenfell Mission headquartered at St. Anthony, on the eastern tip of Newfoundland's Great Northern Peninsula. The nurse in charge — in fact, the only non-invalid there — gave us some tea and showed us her goats. The little hospital was like a small, high-grade country boarding house. The nurse was a product of the country, being part Indian — a big proud girl capable of handling her responsibilities. A few humorous remarks had been passed about the similarity in odour of the goats and me. I was offered the overnight hospitality of the place, which could include a hot bath. Unfortunately, I felt impelled to refuse the invitation, even though the Ranger promised to call for me early the next morning to get me back to Loran Point.

Stan Brazzell appeared late on Sunday afternoon, December 5, 1942, almost a year to the day after the events that had plunged so many of us into unwonted travel. "Did the Stevens boy deliver the message from the radio station?" No, Stevens had not yet showed up from his day off. "Well, you got a boy," Stan said with great satisfaction. Within the hour, I was able to sit quietly by myself and read the actual message from Dr. Grainger in Worcester.¹⁹ Charles Garthwaite McKenzie! His maternal grandfather was named Karl Garthwaite Smith; his father's father had been Charles Richard McKenzie. Barbie and I had sought to honour both grandparents in this choice. We had also provided a girl's name, but it was not needed! I was not to see my new son — or, for that matter, my first-born — for several months.

Nobody was completely happy at Loran Point. The Canadian construction men missed their families. There was not much food and very little variety. There was no official cook. Old Alec could cook, but he complained that there was nothing to cook. A

relative abundance of flour occasionally tempted him to make some really good baking powder biscuits: there were never any left over! There was much talk, but no information, about *Kyle*, one of two ships on the Labrador-St. John's run. We suspected Stan Brazzell knew where the ship was but would not tell. The rest was just time-filling gossip. The Newfoundland stations VONF and VONH obviously could not broadcast ship locations. The damned subs were just off the coast, unless they were cruising the Gulf of St. Lawrence. I could leave without my 1000-pound albatross, since Vissers was to be last man out.²⁰ When the Coast Guard crew was supposed to arrive nobody knew. Ice would be here before long and then "*De Coil*" as the *Kyle* was known colloquially, would stop running. Some time previously there had been reports of two warships lying off the coast, but they finally disappeared without picking me up!

Stan showed up one day with an interesting idea. The *National TV* was taking on dried fish at Battle Harbour and would then be heading home to Bay Roberts, not far from St. John's. Did I want Stan to try to arrange passage? The Captain had already given his cabin to a young man up the coast who had tired of providing pit props for the war effort and wanted to get deeper into things. He was English, and so would be at home in St. John's. Maybe all the passenger space was already used up? "Arrange anything you can." I had discussed with Captain Bradley some sort of emergency water exit from Labrador, which he thought might be possible. Another plan was to go over the snow and ice by dogteam to Blanc Sablon, Québec, where there was an airfield. But it was all pretty tenuous stuff!

I spent my last night in Labrador at Stan's listening to the scrabbling and occasional howls of the young Brazzells, perhaps a bit too excited to sleep well. After breakfast, he embarked and shortly thereafter the *National IV* putted off on her diesel. Mr. Pit Prop was not happy to have his crowded cabin halved in size. His musical instrument remained for some time on what I felt was my side of the bunk. But as time and circumstances changed, Pit Prop proved not only a good but helpful friend. To him was confided the responsibility for deep-sixing the secret LORAN plans in case the Germans decided to blow up the dried fish.

Fish and brews was the menu for dinner, along with diesel fumes. The fish was very fishy and did not go well with the diesel. I therefore went on a hunger strike. *National IV* flounced in the waves less vigorously than *Arrowhead*, but it was sufficient! So the time passed, with frequent trips to the rail. Pit Props was a perfect, sea-going Britisher. Our second night out, as it was darkening, a snow squall came up. The captain quickly tied up at St. Anthony, where we were more than doubly welcome; the captain by virtue of long service and acquaintance; Pit Prop, by long acquaintance and personal friendships; and me because a former Appalachian Mountain Club hutman, now Dr. Evarts Loomis, was stationed at the Grenfell Mission with his wife. The meal was much appreciated, the company delightful, and the conversation interesting, particularly as dominated by my tales of the Rev. Harry Pierce Nichols, long-time White Mountains hiker.

We sailed down the Newfoundland coast with a brisk wind assisting the diesel. The big sail sometimes blocked the view, but it helped the overall economy. The owner greeted us on the dock at Bay Roberts. "I never pay a cent of insurance. Never have lost a ship. No money for insurance." We had heard his litany sung before by his friends and critics. We were glad of the good seamanship of his captains. Pit Prop and I shared a large bed at his house, which served as a hotel, and next morning were driven into St. John's by his wife, who now functioned as chauffeur. My joke about driving on the wrong side of the street was not particularly well taken by the Anglophile wife. It still felt uncomfortably like the wrong side. Thanks to his connections, Pit Prop got us a big room at the government-owned Newfoundland Hotel, and at dinner introduced the delicacy of cod's cheeks. It was delicious, the more so for never having been available since!

The Navy Liaison was no ALUSNOB but he was able to get me and my precious bundles, including the broken measurement equipment, on a plane from Torbay to USNAS Argentina. The idea was to grab a plane for Boston, get the equipment back to the Lab, and see the family before Christmas. After a night in the elegance of Argentina's BOQ, I was introduced to the novel idea of travelling under orders. These were not the orders I might have dreamed up to get a job done; rather, they were real orders signed by someone high up in the Navy. Failing such, the NLO signalled RadLab Naval Liaison Office for LORAN, and Tierney was told that if you bring McKenzie home now, we cannot guarantee to get him back to Newfoundland again.

And so it was that I was called in again and given orders, this time for Bonavista. The orders had been encrypted, so I was given a paraphrase "for your convenience," that left me no alternative but to gather my gear, check out of BOQ, and beg a ride to the Newfoundland Railroad tracks in the dead of night. There I dragged my belongings, sometimes dropping the duffle bag while I negotiated the suitcase and briefcase, going back with briefcase to retrieve the duffle bag until all was aboard. I paid my fare to St. John's because there was no train to Bonavista. Pit Prop, somewhat mystified by my fallen estate, let me back into the quarters I had so recently left triumphantly.

I did not stay long. By mid-December I was in Bonavista, where I found Ken Taylor trying to complete the living and equipment quarters on Cape Bonavista, which had been selected as the site for another LORAN station. Taylor was staying in the old Thorne Lea Hotel while construction proceeded, so I moved in as well. Since at the time there was no LORAN equipment or trained personnel in the town, I spent most of my time shuffling papers and trying to acquaint myself with the region and its inhabitants. While I made a number of trips by foot to the Cape, Taylor did not encourage me to become involved in construction details. Yet one thing that bothered me from the start was that while Taylor had properly had the antennas erected, instead of using the pulleys and halyards provided he had instructed the men to fasten the antenna wires to the tops of the poles, tightening out most of the slack using turnbuckles. When questioned, he said that the antennas had been measured and the lengths were those specified in the appropriate drawings. Unfortunately, he did not know that subsequent experience had led to some modifications which, unfortunately, had not been incorporated into the plans he had.

The Coast Guard contingent from Argentia arrived shortly after Christmas. While there was no room for them at the Cape, we managed to squeeze them into the Thorne Lea. Given the circumstances — and the fact that there was little for me to do — I offered to lend a hand in the hotel's kitchen. This horrified Mr. Thorne's daughter, who served as the manageress. "Oh no, my dear," she quickly exclaimed. The fact that she used the phrase "my dear," a common part of local speech, made me feel as though I had been accepted into a fellowship!

Temporary accommodations were soon completed at the Cape and I decided to move my sleeping bag out there. The building was heated by a soft coal stove that provided almost enough heat for comfort. A shipment of Navy food had arrived, and one Coast Guardsman from Chicago took to crying out "Wassamadda wit de red lead." The cook, understanding that it would be impossible to disguise the menu, quickly produced a couple of bottles of ketchup. Although I did not immediately make a full report of this convenient housing change, Tierney eventually found out, most likely because Taylor, who also functioned as the site's business manager, had carried my housing and victualling expenses as an item to reimburse the Thorne Lea; the sudden dropping of these few dollars doubtless caught Tierney's eye. I believe that Tierney was eventually mollified when I explained that I did not intend to ask the Navy to reimburse me because the food I ate was ultimately paid for by the taxpayer and the space and occupancy of one narrow cot was scarcely worth extensive record-keeping.

Whenever a freight train (which could also carry passengers) arrived at the Bonavista terminus, Taylor had to have its contents transported as quickly as possible to the Cape. To this end he had contracted with a local contractor named Swires.²¹ As it happened, some of the LORAN equipment arrived during a horrible snow storm; without plows or heavy trucks, progress was necessarily slowed. Fortunately, a group of truck owners who had not signed-up through Swires agreed to help, albeit at a higher cost. When the original contractors heard of this, they too demanded a boost in pay. Although this disturbed Taylor, he paid what he had to, since there was no telling when more favourable weather would arrive.

Still, our goods trickled in slowly. I tried to watch for those carrying LORAN equipment so that they could be shunted off at the transmitter location. Taylor became angry at this, preferring instead that all materials be stored in the central warehouse to be moved into position later. Soon space was at a premium. One of the reasons for this was a large number of bundles of insulation which were superfluous to our needs.²² I tried to keep this out of the way of more essential materials. Since Taylor could not be everywhere at once, I was also able to continue to shunt the LORAN equipment to the proper location.

Transportation, however, was not the only barrier to completion of the station. Another obstacle was caused by the fact that there was only one electrician in town, a man named Alec. It was his job to run the power plant, string wires where necessary, and help install radio gear. Alec frequently showed up late and left early, but he kept on with the job. But while connecting the pulse transmitter to the antenna, I discovered that he had

failed to maintain the spacing and length of the conductors so that the radio frequency on one line would "balance" its pair. Having no idea when Alec would return, I drew a simple diagram illustrating the error and how to correct it, and attached it to the equipment. But before Alec saw the note Taylor happened upon it. In a rage he upbraided me for interfering with personnel. Although I denied it, Taylor insisted.²³

As we neared completion, a final difficulty arose, this time concerning the pulse shapes from the station. In this case, there was no way either to test the antenna under various conditions or to use tuning methods that could have cured the condition. Try as we might, the problem remained. Much later I learned that it was finally rectified by the simple expedient of changing to an antenna length more compatible with the output of the transmitter.

Despite the problems, the site was finally completed and I left for home in March 1943. After I left, Jack Pierce asked Bonavista to adjust its pulse rate temporarily and become part of a pair of synchronized stations, using sky waves (which occur mainly at night) rather than ground waves. When this was done Pierce made a series of observations that showed that although the use of sky waves was less accurate, the long base line between the stations essentially washed out the error.

Epilogue

At the end of the war in 1945, McKenzie was employed as an editor for Electronics Magazine, published in New York City by McGraw-Hill. He later served, after April 1965, in a number of editorial capacities for the Institute of Electrical and Electronics Engineers until his retirement in 1972 to a small town in the centre of hiking and skiing country in mid-New Hampshire on the Maine border.

NOTES

1. I had hoped to be able to authenticate some of the facts in this memoir, and that a roster might be available of many more names from Murray Maclauren Outhit, former RCNVR, whose home in 1943 had been in Outremont, PQ, and who was also host on a visit in Boston to HMCS *Arrowhead* by Wendell Lees and me on an evening in August 1943, the day I had driven an old Chevy to Newtonville to prepare occupancy of newly-rented quarters. The McKenzie family was still in Paxton at the time. But the nearly fifty intervening years made it perhaps predictable that I would learn from Canadian authorities that the two chief officers, Commander Edgar Skinner and Lieutenant Commander Thomas Gilmour (captain of *Hepatica*), as

well as Murray Outhit had all died. Rest in Peace, brave sailors and heroic brief companions.

2. Despite my basically "civilian" approach to the job, the work environment was obviously shaped by the military as well as by security requirements. For example, I could not gain access or leave my workplace without my badge and often had to provide additional identification when visiting other sites. In the field I often had to deal with officials — including US and Canadian Customs and Immigration officials, security forces at places like HMC Dockyard Halifax, and later the Newfoundland Constabulary — who wanted to know where and for whom I worked.

3. Although he never was so called, Jack Pierce might well have merited the title "Mr. LORAN" because of his role in its development.
4. The actual location was in Lower Whitehaven, at the time almost a thirty-minute drive from Canso.
5. MacMillan regularly took his Bowdoin College students on voyages to the north during the summer, a fact that made him something of an expert on Arctic conditions.
6. Since I did not then know what my route to Labrador would be, I did not think it prudent to ignore Captain MacMillan's advice. In the end, of course, my route took me far from St. John's.
7. "Glen House" was a hotel at the base of the Mt. Washington Auto Road.
8. This was a reference to the fact that Tierney expected me to make Battle Harbour my first goal and not to be sidetracked into going to Bonavista.
9. Although they had never met, ALUSNOB had already done a good deal for Tierney
10. Ozalid was the trade name of the reproduction used at RadLab for line drawings. These were similar to blueprints, but better in a variety of ways. Tierney likely sent a set for Bonavista on the off chance that I ended up there rather than in Battle Harbour.
11. Here I mean only that by his manners and his language he was clearly from Ontario.
12. "Little Toronto" was a neighbourhood well known to Canadian naval personnel as a district in which to have fun.
13. The Routing Officer was a naval official in charge of assigning berths at the various docks.
14. Lark Harbour is a town on the south side of the Bay of Islands near its mouth.
15. Bill Vissers was the top man at Battle Harbour. Clarence Henson, on the other hand, had a difficult time at the site. A southerner, he had to cope with a hostile climate and inadequate food under less than ideal conditions. It is a tribute to his stamina that he did so well.
16. The "Stevens boy" was a boy only in the sense that he was the butt of a lot of jokes! In reality, he was a full-grown adult.
17. There was no way in the Dockyard that the equipment could be put to a complete test, nor was there any time. While I was convinced that an important resistor was probably damaged, it was impossible to obtain a replacement. In the end, all I could do was to hope for the best.
18. By this time Pierce was head of Division II (the LORAN group).
19. Dr. Grainger was the Worcester MD who delivered our second child in Holden, MA, on December 5, 1942.
20. It is not clear to me when Henson left, but Vissers was supposed to be the last to go.
21. Swires had taken over the contract from another local man, Heber Way, who felt aggrieved that he had been unfairly overruled in the matter of hiring truckers and had been therefore unable to earn income on his contract. The suit was eventually dropped.
22. When I first noticed these bundles, I was told that they were probably sacks of potatoes!
23. When confronted by Taylor, I had forgotten the note. When I later remembered, I did not dare to admit it for fears of making matters worse. It later turned out that Taylor's rages, which occurred with some frequency, were caused by a vitamin deficiency.