# Looking for the Bottom of the Ocean from the Top of the World

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# Chapter I

## FROM THE TOP OF THE WORLD

From the air, it didn't look like much of a place to live. It consisted of lots of snow sitting on large, flat ice floes floating on the Arctic Ocean. In some places, the floes drifted free of each other. In others, they had slammed together, raising ice edges that looked like sharp or rounded humps. Black and blue puddles, some quite large, dotted level parts on the ice. I wondered how deep the puddles were. Did they have bottoms? How cold was the water? If you stepped or fell into a large hole, how difficult would it be to get out?

Long huts, with half-round roofs, sitting around the flat ice, looked uncomfortably inadequate. They were mounted on bulky sleds, and hefty yellow tractors stood ready to move them if the ice broke apart. But, would the heavy load of a house and tractor sink through thin ice or into scary-big puddles of melt-water? I would soon find out.

The bulky Air-Force plane, bringing men and supplies from Alaska, dropped closer to the ice-station called Alpha 2. When it bounced down on the rough ice, I was pleased at how firm the ground felt. We landed about 600 miles from Point Barrow, the northern tip of Alaska, and 800 miles from the North Pole. I always wanted to go to the top of the world. It was June 14, 1959.

On May 18, 28 days earlier, my wife Alicia, and I left the west side of New York City, bound for Fairbanks, Alaska. We drove about 3,600 miles in 9 ½ days in a 14-year-old blue Pontiac coupe. The trip included mechanical problems, flat tires, bad roads, bad moods, mud, ice, snow, bumps and bounces, narrow bridges, a few laughs and lots of anxiety. My wife does not drive so she read "Endurance" aloud. That book tells a story of incredible stamina, bravery and hardship, experienced by English explorer Ernest Shackleton and his men in Antarctica in 1914-16.

We drove on the ALCAN (Alaska-Canada) Highway, a 1,422-mile track, much of it unpaved then. We crossed a frightfully high and narrow railroad-bridge over the Murray River. Wheels on the right side, for us those with the worst history of flats, rolled

between the rails. Left wheels had to be steered over a slim siding with an alarmingly low outside rail.

Next day, the problems came from icy mountain roads. The following day, we moved over to avoid a large truck free wheeling down a steep road we were climbing up. I gave away too much room, and the Pontiac slid into a roadside ditch. The trucker generously stopped to help us. Using two sets of tire chains, we hocked the back of our car to the rear of the truck. As it pulled ahead, I imagined the truck moving forward with only our rear axle. To our immense relief, the entire coupe came out of the ditch and on to the road. But it would not start.

The trucker guessed that the steep angle our car took in the ditch had drained the gas from lines leading to the engine. He unhooked his truck's air brakes, put the hose-end into the car's gas tank then stepped on the truck's "go" pedal. I hopped in the coupe and stood on its accelerator. The engine started. We wished each other a good day, then went-on our separate ways.

Later we got two flat tires at the same time. Rescue arrived in the form of a Royal Canadian Mounted Police officer. He did not ride a horse or wear a scarlet jacket and dark blue trousers. We did not call him for help. Instead, he arrived in a high-speed vehicle and faded khaki shirt and pants. He drove us to where we could buy useable tires then helped me put them on.

We arrived at the Alaskan border on May 26. A construction worker took our picture.

By noon the next day, we had covered the 300 or so miles to Fairbanks. When we stopped for a traffic light on a downtown street, our engine stalled and would not restart. People behind us did not honk horns or show bad manners. They helped push the car to the curb and to get help. We made our way to the headquarters of the U.S. Geological Service, which provided us with a room in a Quonset hut for a very reasonable price.

Alicia and I spent an almost-comfortable six days there, then she caught an airplane back to New York City on June 2. We sold the Pontiac for enough money to pay her fare, $300 dollars.

I began an anxious wait for an Air Force cargo plane to take me to Barrow, the northernmost town in Alaska. From there, weather and cargo loads permitting, I would fly to a chunk of ice some 5 ½ miles long and four miles wide.

Plans called for that slab of ice to drift on ocean currents to the North Pole, about 750 miles away. The U.S. called this scientific drifting station “Alpha 2”. (Alpha 1 failed to make it to the Pole.) The government later changed its name to “Ice Station Charlie” for a reason unknown to me.

After six frustrating days of going nowhere, I caught a lift to the top of Alaska, some 600 miles from Fairbanks. It’s a picturesque trip with engaging views of the wide, silvery Yukon River and the snow-splashed Brooks Range with peaks 8,500-feet and higher.

At 3:20 pm on June 8, we made a hard landing in a bleak, muddy place, peopled by friendly natives called Eskimos in those days. I met a friend, Hans Bengaard, with whom I spend most of 1957 in Little America, Antarctica. There and here, Hans tracked what goes on in the high polar atmosphere (ionosphere). It’s a nice, if cold, job. A Danish scientist, he studied the colorful displays of natural light that shine only at the top and bottom of Earth, aurora borealis in the far north and aurora australis in the south. I enjoyed dinner with Hans, his wife and two children, as well as many “remember-when” stories.

For eight days, I waited for a ride to Alpha 2, and helped scientists in the Barrow area with various mechanical, electrical, and heavy lifting chores. I learned a lot from that work. Finally, on June 15, after endless packing and unpacking, I got a ride to what some people called “nowhere”.

# Chapter II

## LIFE IN NOWHERE-VILLE

## AVOID LARGE PUDDLES

I felt relieved when that unstable looking ice easily held the weight of our airplane. Everything looked stronger when you stood on the surface. No big cracks in the runway floor. The huts appeared sound, as did the tractors that would sled them to thicker, less hole-dotted ice in case of emergency. A sign announced that we had landed at “Nowhere International Airport, Elevation 0- feet.

Keeping that lack of altitude in mind, I avoided large puddles as I walked carefully to the Quonset hut I would call home for an unknown time. This prefabricated abode was larger and more sturdy than tents, tractor floors, ship- births, and under-ice quarters many of us had lived in before. The key to survival and sanity in such places lies with your personality and that of your hut mates.

Three of my bunkmates worked for Columbia University’s Lamont Geological Observatory, as did I. George Cvijanovich enjoyed a reputation as a brilliant field geophysicist and an excellent carpenter. Arthur “Chuck” Hubbard was a jack- of-many-trades, particularly electronics. Henry “Hank” Kutchale, I knew as a hard-working geology student. I had worked as a geologist for a year in Antarctica, and as an oceanographer on Columbia University’s research ship in the Indian Ocean.

The non-Columbian in our hut, Don Gerson, graduated from New York University as a meteorologist and now worked for the Navy. As a roommate, they don’t come any better.

Eleven other researchers worked with us to learn everything scholars wanted to know about the Arctic Ocean and what lay on its bottom. Two others worked with Gerson for the Navy to measure how fast and far our ice-home drifted. Four observers kept track of whatever the Weather Bureau wanted to know about the top of the world. Finally, the University of Washington, Seattle, had sent five glaciologists, oceanographers, and a navigator.

The Air Force supported our work with mechanics, tractor drivers, radio operators, cooks and others, under the command of Captain James Smith.

Mixing such a variety of men together in a place of danger, deprivation, and cruel weather is not going to produce an atmosphere of continuous joy and comradeship. Some of the people you worked and lived with, you wanted to know for the rest of your life; for others, one-day was enough. Some boasted enviable brains and sure hands, others were not so well endowed. Some told good stories and jokes, others you avoided whenever possible. One outstanding thing stuck in my mind. Despite danger, miserable weather, and loneliness, no fights occurred, at least that I know of.

On June 17, our ice home floated at 76 degrees, 33 minutes north; 160 degrees, 39 minutes west. That's in the Beaufort Sea, about 796 miles from the North Pole. We expected to drift west and north with natural currents that flow past Siberia, go around the North Pole, then coast south and east into the Atlantic Ocean.

Our ice floe was 12-13-feet-thick in flat places. Most of it laid underwater, so its dry, walk-on part reached only one or two feet in height. Beneath us, the deepest parts of the ocean fell to 7,200 feet, perhaps more.

The cold war between the United States and what was then the Soviet Union keep much information about the Arctic Ocean secret. Geologists wanted to draw more accurate maps of the ocean bottom than were widely available. Such knowledge could reveal much about how things got this way during Earth's long history. In 1959, enough unknowns existed to keep a ocean of geologists occupied for their lifetimes.

The Navy and other military people wanted to know more about the top floor of the world for more practical reasons. In 1958, the nuclear submarine U.S.S. Nautilus made the first submerged crossing of the Arctic Ocean. Starting north of Alaska, it passed the North Pole and proceeded to the Atlantic. Enough knowledge of underwater geology existed to allow such a voyage. But suppose the Navy wanted to go elsewhere, without letting others know. And most of the world's subs could not stay below the surface as long as the newer nuclear- powered "boats"? Did submerged mountain peaks or unknown plateaus exist that would make such a trip dangerous, or deadly? A more accurate under-ocean road map than now existed would answer such questions. For good example, our

Columbia team discovered a submerged mesa. The size of a small island, it rose to a depth of 900 feet below the surface, shallower than most submarines can dive.

# Chapter III

## WHAT ARE WE DOING HERE?

## THE GOOD, THE BAD, AND THE BROKEN

To study this sparsely known ocean as its movements pushed us around, we brought crates and barrels of instruments. There were seismometers, magnetometers and other meters and mometers, nets, corers, sample bottles, wires and cables of all lengths and diameters, circuits of all kinds, amplifiers, transducers, transformers and recorders. Records would be made of ocean depths, water and air temperatures, amounts of ice, snow and rain, changes in clouds and winds, mud, sand, rocks, plants and animals on the ocean floors. Maps would be drawn of water currents and the latitudes and longitudes they took us to. Careful notes would be penned of fish, seals and polar bears that visited us. (Some of the latter would loss their pelts.) A few of us kept journals describing what we did.

Not all of this labor went according to plans. Tractors fell though thin ice into what we called the “underwater garage.” (No drivers went with them.) Equipment we needed never arrived. A winch we wanted arrived months late. Spare parts, machines, instruments, food, beverages and packages from home arrived via parachutes that never opened. Para-packages increased as we drifted away from the reach of all but larger aircraft, or as our icy runway melted too thin to use safely. Like everywhere, some days nothing went right. Murphy’s Law – if anything can go wrong, it will – ran ramped. Of course, Murphy was most busy when winds blew wildly or getting warm seemed impossible.

One cheer-up factor for the four of us from Lamont Observatory involved orders from home. Our job was to get all equipment and record-keeping working to human perfection, or better, if possible. After that, we would be replaced by two handy men. “One month, tops, then you’ll be out of there,” my boss said. It did not work out that way. If the Air Force can’t land on thin ice, it can’t give you a ride home.

I was not thinking about that on June 16, my first night on Station Charlie, which I spend eating, drinking, and telling stories with fellow scientists and “air dales” (short for Air Force people). Next day, Chuck Hubbard and I started to put together the smooth-running scientific laboratory we came here to build. And all four of us readied equipment for the chores of blasting and drilling. The former is dangerous and difficult, but we needed to make echoes nature does not provide. Most of this chore takes place at open edges between our flow and others. Drilling holes in the floe floor is for lowering instruments into places to measure and obtain samples of. For the latter, we began constructing a small hut with a big hole in its floor through which instruments could go down and up. We called it a “hydro hole” to distinguish it from natural openings made by ice breaks and melts.

We started holing with an ice drill, but his gave us a Swiss cheese effect not a single large side opening. Knocking out un-drilled edges with poles and shovels became arduous and ineffective. Next, we tried melting get-in-the-way walls with electric heaters. This effort blew out lights and fuses all over Alpha 2. Then Chuck and I lowered ourselves into the gap and employed shovels and buckets to dig out an open useable space. This meant standing about several feet below sea level, working to carve out a place we would have to exit quickly as the frigid water came up. Such a task involves frequent coffee breakers and thoughts like, “I became a scientist to do this?”

Our last-hole resort involved a dynamite-like blasting powder called Tetratol. We lashed a charge onto a pole and lowered it into our incomplete hole with a thick wooden box covering. When the bomb went off, the pole flew about 50 feet into the air and 150 away. The box landed on the roof of a hut. After five days of drilling, digging, basting and blaspheme, we created a hole to be proud of, an opening large enough to send large instruments to the bottom of the world.

On Alpha 2, this was accomplishment enough for a celebration. A can of tomato juice from a generous Air Force cook added to vodka from George’s locker put us into a champagne mood. A roast beef diner in the mess hall added to our spirits. The evening ended with the running-out of vodka.

Another reason for celebration came from Ham radio hobbyists here and there. One night, I talked to my wife with their help. Amateur radio operators at Alpha 2, including my roommate George, used station radios to contact fellow Hams in New York, New Jersey and other states. These fellows then hook you up to family and friends via telephone A guy named “Doc” “patched” me (as they call it) to Alicia. She sounded glorious, with her bubbling laugh and unquenchable good humor. It was something warm to hold onto on a cold arctic night.

When complete, the hydro hole gave us a window on the water world. We lowered instruments to get water temperatures and samples, and to measure depths and currents that pushed us toward the North Pole. We collected mud, sand and living things from the ocean floor, and pushed cores (hollow tubs) into its bottom to pick-up small stones and sands which provide hints of age and history. Underwater cameras produced pictures of it all.

Sounds (laser pulses) we made traveled downward then echoed back to recorders, revealing depths, distances and enough other information to draw maps. These echoes act like the sonar pings that reveal shallows and enemy submarines. When such devices are installed right, they continuously draw diagrams. Such devices do not require continuous monitoring. Add more energy to sounds with explosives and echoes travel farther and deeper. These boomers perform like tailored earthquakes whose energies bounce around before they echo back to waiting recorders. Such explosions were the ones set-off at openings a mile or more from living and working huts

If powerful enough, seismic sounds travel as far as five-miles below an ocean floor. At these depths, the familiar rocks of Earth’s upper crust begin to change to volcano-hot boulders and metals. Under continents, such layers lie about 20 miles down, making the sea an easier to reach window to the deeps.

On Alpha 2, we tried to set-off explosions powerful enough to send up echoes from the bottom of Earth’s solid crust. Our Lamont crew lowered a 55-pound bomb 400 feet down then blew it up with a radio signal. To make a booming story short, we failed to get any new science out of it. Another big-bang scheme developed to drop a king-sized bomb from an Air Force plane. But the idea didn’t fly. Three years later, I worked on a

U.S. government project to drill a hole in the ocean bottom deep enough to reach the bottom of the bottom (the Mohole project). That plan never survived paper work and meetings.

# Chapter IV

## SUBMERGED ISLAND FOUND

## UNDERSEA MOUNTAIN MAPPED

Although we could not reach the bottom of Earth's crust, we did come upon an island plateau on the floor of the Arctic Ocean. This discovery changed maps and provided information that submarines could use immediately. On July 7, as Alpha 2 drifted westward at 77 degrees north latitude, the water grew shallower. Nets dragged across the bottom began picking up more life, animals and plants absent in deeper places. The bottom came up to 5,100, then 900 feet. Shrimps and anemones appeared in our trawls, as did a small, strange fish with large blue eyes on both sides of their drop-shaped body. None of us had seen anything like it before. More soundings revealed a mesa-like island extending some 150 miles in a north-south direction and 100-120 miles east to west. That makes it about as big as Connecticut and shallow enough for deep-running submarines to avoid.

We were not the first to see this submerged island. A Russian map I checked showed a rise in elevation at this location. Also, on August 2, 1958, the nuclear submarine U.S.S Nautilus encountered part of the same plateau during the first undersea voyage across the North Pole.

In the 1950s, Russia (then the Soviet Union) and the U.S. were in a Cold War. Both country's paid historically close attention to the big ocean in both of their northern backyards. At this time, the Russians found a previously unknown mountain range further north of the plateau we began mapping. At latitude 82 north, this rise runs parallel to the huge Lomonosov Range, which splits the Arctic Ocean from Russia to Greenland. The rocky mammoth was named for Mikhail Lomonosov, credited to be the founder of modern Russian literature.

The newer, smaller island we drifted over gave us plenty of arduous but exciting work to do. It involved endless lowering and hoisting of waterproof cameras, corers and nets, constant checks of sonar pings bouncing back data about undersea scenery. There

was blasting to obtain deeper knowledge, as well as daily measuring of the sun's position to map where we were. Sometimes, a camera returned without pictures, a corer without mud, a net with nothing interesting. Other mornings, we found that our sonar had ceased pinging during the night. Then came the chore of finding out what had happed and fixing it.

One of our most exasperating problems involved the lack of a winch that had been promised. To lower and raise instruments, we used a derrick mounted on the rear of a large (D-6) caterpillar tractor. We wound, by hand, 21,000-feet of thick wire on a drum at the rear of the tractor then backed it up to the hydro hole. With careful handing, that worked okay. But it was like sharing a wife. The Air Force needed the machine for pushing snow around, leveling the runway, moving sled-mounted buildings, and picking up crates dropped by parachutes, including those that failed to open.

This turned out to be dangerous work, as the ice we lived on got thinner during July and August. Two smaller tractors (D-4s) sank into bottomless ponds. There was no backing out of the underwater garage.

In hope of obtaining our own winch, we met every aircraft and parachute with great expectation. With great dread, we watched other equipment, food, and whatnots slam into uselessness when chutes failed to open. Would that be how our winch would land? We pleaded repeatedly—exhaustively—by radio and letters for a winch. From mid-June through July and most of August, we were like kids begging Santa Claus and all his administrative elves for our badly needed present. We could not understand why our pleas were not heard.

On August 28, the prayers (and curses) were answered. The winch drifted down from military heaven under an open umbrella. Inadequate packing made it a hard landing. Low-grade explosives in the same package added worry. One corner of the winch smashed into some ice in a melt pond. But we pulled out own dream machine with the help of two lines attached to a weasel vehicle.

Next day, we unbent a mild bend and started-up the winch that almost never was. It purred like a new lawn mower. And it was a good day for winching, a warm 28

degrees, overcast sky, and snow riding in on a north wind. Alpha 2 lied about 720 miles from the North Pole.

# Chapter V

## PARACHUTES, PARTIES and POLAR BEARS

## GEOPHYSICSTS LIKE PARTIES, TOO

Living on an ice floe is not all work and no play. Mail arrives in planes and under parachutes. You can call home by radio--weather permitting, or have a pizza party in the mess hall. This is sugar we needed to sweeten sour moods, lousy weather, equipment failures, and loneliness.

On July 4, for example, we celebrated both the great American holiday and the fact that Charlie Station (nee Alpha 2) had drifted to within 745 miles of the North Pole. In my journal I described it thus: “we ate pizza with hot sauce, drank bear, farted, and told stories.” Cook John Houston served in the merchant marine and army, as well as working as a detective, before enlisting in the Air Force. Driver John Wandishan spent time in the Coast Guard and was stationed in Korea and Greenland before coming here. Few of our crew had lived quiet lives. Captain Smith, our commander, contributed a case of beer to the festivities then left early.

Parties were good, but radio--phone calls home were better. Several Air Force guys and George Cvijanovich spent much of their free time, which wasn’t a lot, contacting the amateur radio hobbyists who patched us to family and friends with their telephones. On July 27, a snowy cold, foggy night, I was warmed by a long talk with my wife. Weather was so clear that we heard each other’s every word, something that doesn’t always happen during Ham gab. I walked back to my hut feeling brain and heart happy. It was 2 a.m.

Later that day, I struggled to put together a homemade corer to replace one we had lost. This device is slammed strait down, hundreds or thousands of feet, into the ocean’s muddy bottom. Then it must be pulled up to the surface without loosing the cylinder of scientifically valuable glop. A factory-made corer stuck in the bottom, so I had to make one by fastening together rods and wires found here and there at the station. On one try-out core, the device penetrated 54 inches into the bottom then came up with

the mud sample intact. Next day, Moby Dick, as we named the corer, went 60 inches into the mud. It was a small victory, but it felt really good.

We all needed such experiences to bring back the gusto we enjoyed when we signed up to come here in the first place. That zeal struck me again on August 4, when a military plane dropped, among other things, seven letters from Alicia, mailed from July 14 to 24. She updated me on all the big and little things she bought for our apartment, and what went on where she worked. The C-123 airplane that delivered this manna came over at an unusually low altitude of 300 feet to enable the pilot to see us under the fog. He could not land the heavy vehicle on our melting runway so he dropped the needed supplies for the station and gifts from home. At such an altitude, everything hit hard and fast.

Some of the cargo was not packed securely enough for such a fall. Tomatoes and lettuce landed as unappetizing salad, potatoes were pre-mashed, crackers crumbled, bread went soggy in melt water, apples sauced and wiped cream sloshed. We gave each other "what-can-we-do" looks and quickly decided on an outdoor picnic. Wiped cream scooped up on apple pieces are not bad on a 34- degree day.

The Captain's scotch, Cvijanovic's vodka and 12 bottles of bourbon landed safely. The owners generously shared their stimulants, helping to turn a loss into a gain.

I had an extra reason to celebrate. Lamont Observatory notified me that, as of August 1, my monthly salary would be raised from $400 to $416.67. My wife made more than that, but she did not get free board and room at an ice station. I remembered my first job as an ordinary seaman on a leaky freighter in 1945. I earned $37 a month. The ship's captain noted that this salary also included "three slops and a flop."

The odor from smashed food and our garbage probably contributed to an increase of seals in the neighborhood. Twenty--plus hours of daily daylight also made them more visible. And where there are seals there will come polar bears.

One evening, Don Gerson radioed me to meet him right away with a rifle. He spotted two bears near a Navy instrument tower at the edge of our floe. I grabbed the weapon and some ammo, and we met in sight of a large female and her cub.

Don wanted a bear pelt. I was interested in taking photographs. Doing either would not be easy. These bears move quickly, have sharp eyes, and will attack humans, Eskimos warned us. We had only five bullets. Don's 357-magnum pistol required getting too close for bad shooting.

The bears settled the question. They saw us and hurried over a nearby hummock. We followed. About 400 yards from the hill, momma bear stuck her head up for a quick check on us. When we reached the top of the hummock, they were 400-500 yards away at the edge of our ice. We followed their tracks to the water then fired several "don't-come-back" shots. I felt good about not killing them and told Don it would be a lot of trouble to haul their carcasses across the gap between floes and to our hut.

As summer continued, so did evidence of seal and bear visits. Seals took advantage of melt holes to come up to the top of the thinning ice. Signs of seals sunning nearby emphasized the wisdom of warnings about not stepping in puddles with both feet at the same time. If they could come up, we could go down. Small silver fish and tadpole-like animals brought up with trawls showed us they had plenty to eat.

Polar bear tracks appeared as close as 50 feet from our buildings. Paw prints and urine stains showed up around our hydro hole. We carried rifles to work, but I held to my decision not to shoot a bear unless it attacked me. (The state of Alaska charged anyone it caught with a polar-bear pelt at an airport a $50 hunting-license fee.)

Meanwhile, the parties continued. Imagination increased as stocks of the best food and beverages decreased. We enhanced one "no-good-reason-for-it" celebration with a punch consisting of random amounts of medicinal rum, rye whiskey and questionable--quality bourbon. They were mixed with grape, orange and grapefruit juice in no set amounts.

Such punch came out in a unique shade of purple. You have--to give a name to something like that. "Passion purple," "Alpha juice," Flavour indescribable," and "No words for it liquor" were used.

This party proved so successful we did it again. A rather tasteless "dropped- from-the-sky" pizza got improved with generous additions of red peppers. Ambrose Berry, a

cook of many skills, thrilled us with a brew of fermented apple cider, apricots and prunes. One day in August, our chefs put together an outdoor barbeque of ribs and chicken smoked and burned over a 50-gallon drum fueled with wood and coal. Outdoors that day boasted near freezing temperatures, fog and a cutting wind. Dress included galoshes and heavy coats. Vodka and a low quality bourbon known as “old overshoe” provided some warmth and gayety. These get-togethers unveiled individual and group personalities—good, bad, or missing. They included stories, jokes, insults, shyness, and jealousies, but no fights.

The good humor parts went a long way toward lifting spirits, but not as high as mail. On August 19, a postal delivery via parachute landed a mile-and-a- half away on another ice floe. A crew of us spent most of an afternoon getting a rubber boat, arming ourselves with bear rifles, searching for the mail sack and dragging it “home.” I received many letters from my wife. She worried about when I would return. With the set backs we experienced obtaining our equipment and getting everything to work, it obviously would not be when we planned. Weather melting away our airport could keep us here until the runway froze hard enough for landing, probably the end of September or even October.

Her letters expressed regret that she “did not really know me” and would she “be able to satisfy me.” I worried about her having dinner with a guy who helped us reach each other by Ham radio. I did not want to be away from her so long again. I vowed to never go to places like this again and to take her with me wherever else I went.

# Chapter VI

## LOSING the GROUND YOU LIVE ON

## SLEDING, SLIDING and SINKING

The ground we lived on kept melting. Temperatures 750 miles from the North Pole rose to 37 degrees F. and dissolved a worrisome amount of the snow and ice under us. Our home hut and other buildings, mounted on sleds, stood a foot above the ground. Such melting did not occur evenly. Our living hut, for example, tilted five degrees. University of Washington scientists could not open one of their lopsided doors.

To keep up with the down, the Air Force moved our living quarters on June 30. This required securing everything fragile, placing doors against laden shelves and tying things down. Chuck and Hank remained inside the building to hold onto things during the jolting sled ride.

The skillful Air Force crew dragged the entire hut backward, scraped away the unwanted snow hill, and pushed our quarters back onto level ground. The whole job took less than an hour.

But nothing goes that easy in nowhereville. Our stove quit heating after the moving. John Hagey, a pleasant and capable mechanic, quickly fixed it, but not for long. Two days later, during especially cold, wet, foggy, windy weather, the vital device quit again.

George and I got it going again but at some cost to our morale. Fighting ugly weather, and swearing at and repairing balky equipment took time away from doing the science we came here to do. Additionally, it had become clear that we would be here longer than we expected (or wanted). The runway, at elevation zero to begin with, kept cracking and melting. Nowhere International Airport was moving further toward nowhere.

On July 2, we received a message from the Air Force command, in a non-melting, non-floating part of the world, requesting an estimate of our location six months

from now. Captain Smith pasted the request to Dick Sommerfield, the University of Washington navigator and a man with a keen sense of humor. He advised the high and dry command that, “your request caused much merriment among the scientists.” None of the scientists or military, on land or sea, knew that, five months hence, Ice Station Charlie would be cracked, split and melted out of existence.

In the meantime, there was work to be done, more buildings to be leveled. On July 4, the powerhouse had to be moved, requiring all electricity to be shut off. In the adjustment process, the building slid sideward, tilting 25 degrees and coming to an uneasy rest on one of its corners. A tractor held the hut from slipping further by holding it with a thick cable. Another tractor straightened it up. Those not involved in the operation watched somewhat breathlessly, then cheered at its success.

We hoped, prayed, and cursed for the melting to stop. When it does, however, it will likely occur at the cost of higher winds and icy snow. On July 6, cold air swirled in as fast as 20 miles-an-hour, driving stinging sleet horizontally from east to west. At times, ice crystals, frozen high in the sky, became ice water when they arrive on your head. “It is like cold spit,” observed one sergeant. Such weather attacks not only make work more difficult, “they piss on your mood,” noted another. It does that on solid land too, but it feels much worse when you don’t have a warm house to go to.

Of course there were dry, sunny days, too, and they had a reverse effect. We called them “Kodachrome days,” because it was a time to snap picture of skies and colors you never see on land. If you did not have a camera, you felt left out. You wanted to remember the sights, as well as the faces of “good ole boys” living and working with you.

During such days, our Lamont group worked to get photos and samples of the ocean bottom with underwater cameras, corers, and trawls. Besides what exists now, it is possible to learn quite a bit about history from submerged layers of mud. Combined with other data, researchers can uncover information about past winds and currents that brought the mud, sand, orange peels, and remains of plants and animals to where they are now. From such knowledge, we concluded that our floe came from south of where we were now and was about four-years old. A good find in bottom mud could make days of bad weather, titled houses, and non-working instruments worthwhile.

Talking about misbehaving equipment, on July14, we found our laboratory hut almost afloat in knee-deep puddles. We pumped the water into our nearby hydro-hole for three hours without making a visible gain. Either the lab's puddles connected to others around the camp or the hydro-hole brought in the water and we were trying to pump out the whole ocean. We worked out a solution more like what a farm boy would do than four scientists, we switched from ankle boots to hip boots.

Dressed properly, we discovered that the ocean floor was rapidly rising from thousands to hundreds of miles. Our floe had drifted over the newly discovered submerge island, giving us a chance to map and explore it in detail for the first time. Corers fetched--up seashell fragments, small rounded stones, and rocks that appeared to be from volcanoes. Together, they made-up a history-book that we and other scientists could learn to read. Mellow mid-July weather of clear skies, mild winds and warm temperatures (34 degrees F.) made work and moods lighter.

As the delightful conditions held, the ocean bottom reached-up to 900 then 400 feet from depths of 7,000-plus. It became so much easier to lower cameras, current meters, trawl nets, and corers down and get them back up again. Photos showed numerous starfish, what appeared to be worm tubes, and many unidentified things. Cores sunk as deep as 53 inches raised-up samples of mud, rocks and "whatevers" that would thrill biologists and oceanographers in the labs of Lamont on the shores of New York's Hudson River and elsewhere.

Drifting across a shallow valley in what we called "no-name-yet-island," we found two large starfish of different species but the same bright reddish-orange color. We also netted a pair of slender worms, and two jellyfish, about five inches, long encrusted with a coral-like growth. One trawl gave us a three-inch stone covered with coral colonies and worm tubes. Another trawl brought up almost three gallons of mud, enough for geochemists to obtain a radiocarbon estimate of age. In all, we hopped these materials would yield the first scientific picture and partial history of a place largely unknown.

Gentle weather also increased the likelihood of airplanes parachuting goods and goodies that could not be landed on melting ice. On July 17, a chute dropped me a box of chocolates, six ballpoint pens, two elegant ties and a linen handkerchief, all from my

wife. I wore the tie, which smelled flower-sweet, to the mess hall that evening. It drew much comment. I decided it would serve me better under my pillow.

Mess hall specials often accompanied paradrops. One evening, cook Ambrose (Arnie) Berry and oceanographer Dick Peary made hot buttered rum toddies for everyone. Their recipe included cloves, cinnamon, nutmeg, honey, and a little water (very little). Berry paired the drink with a sumptuous buffet of olives, celery, tuna fish and crackers, scallions, cheese, and mixed nuts. It merited the rating of "hardy party at nowhere."

On July 30, temperatures rose to 38 degrees F. I worked gloveless in short sleeves. Nice! Air Force crews labored to straighten buildings tilted and racked by uneven melting under their foundations. Not so nice. A maintenance and storage hut stood crookedly on an ice pedestal two-feet high at the edge of a large pool. Our mess hall lied on the other side of the pool. Crewmen used large tractors to push and drag both buildings to flatter, dryer surfaces. The mess hall split into two sections during this process. Dinning room and kitchen parted with the latter twisting out of shape.

Such melting, cracking and opening of floe floors on our predecessor station, Alpha 1, forced its abandonment before reaching the North Pole. A wide crack separated the science building from the runway. Splits as wide as 30 feet scatted huts over three floes. Veterans of those days say it took as long as 45 minutes to get from one floe to another, and you could get lost on a foggy day.

Ice fragments don't just break apart. They also slam together, creating jagged, broken fragments and humps difficult to climb over. About a mile from one end of our runway was a line of rounded hummocks stretching across one side of the station. Close inspection led to the conclusion that this humpback wall came from a collision with another floe, which increased our width by four miles and length by two miles. Oval holes at the thinnest parts of this add-on marked places where seals come and go. At locations where the floe edges did not meet, new ice slabs meet each other with tearing, tangling, and popping sounds. It's both an eerie and somewhat pleasant sound to here in such a frozen cacophony.

A short way from this singing ice was a small lake full of sparkling blue fresh water. The water stayed fresh because the lake did not extent to the bottom of the floe. About a quarter-mile in diameter, its surface glistened with silver- white crystals. The sparkling reminded us of diamonds, so we named it “Diamond Lake”. Crystals of new ice as long as two-feet floated on the surface. It took realizing that temperatures hovered in the mid to upper 30s to freeze out a desire to go in for a dip.

By the end of July, Station Charlie was drifting westward about 730 miles from the Pole. Wind and water currents moved us along about three to four miles a day. At that rate, it would take some 197 days to reach the top of the world. That worked out to six-and-a-half months or the end of February 1960.

Most of us did not expect, or want, to stay on ice that long. My job demanded that I set-up a working geophysical laboratory for scientists that would replace me while Charlie drifted around the Arctic Ocean. I had not done this completely yet because a large winch for lowering instruments as deep as 7,500 feet did not arrive on time. I had spent 12 months in Antarctica and I did not want to do that much time again, especially since I was newly married. I did not known how many months here I had left in me.

Landing an airplane carrying a winch as heavy as a caterpillar tractor could not be done on thin, melting ice. The alternative was to bring it down under a large parachute, or parachutes. The four of us from Columbia University must them set-up the machine and get it running like a new truck. How long that would that take stretched my knowledge and information into the unknown. I hoped to be on my way home by early or mid September, after four months of drifting. That would be enough. “You’re getting’ old Bill,” my friends commented. I was 29, going on frozen.

In the meantime, I appreciated watching my Air Force companions working so diligently to push and shovel every bit of solid, loss snow and ice into melt holes on the runway. Months of doing this and temperature lowering would finally bring in airplanes big enough to land a winch and fly me out of here.

As loose snow and ice filled runway holes, the question of how much was needed to whole a hole. University of Washington oceanographer Jim Gast devised a test to help answer that deep question. He would run as fast as he could across a newly filled opening

to see if it held his weight. The test looked to others like too much fun to resist. The Arctic Sliders Club was born.

Club members, including Chuck Hubbard and I, started with rushing over narrow slots, then proceeded to wider gaps. Sliding dry across a mended crevice provided fun for the slider, not making it across made fun for others. Of course, such a pastime gave birth to betting, bull and bragging.

Runway mending did not always turn out to be a filling or satisfying experience. On August 17, a large D-6 tractor driver was pushing snow and ice into a wide and deep hole. Sgt, John Wandishan, in a smaller D-4, packed it down with the bottom of the shovel on the front of his vehicle. At one point the front began to sink deeper than seemed safe. John tried to back out, but the tractor slumped deeper. All effort he made failed to halt its downward movement.

John anticipated that such a thing might happed, so, like other drivers, he worked with the tractor's roof hatch opened. He scrambled through the roof as the vehicle continued downward. His hands grabbed the edge of the runway hole and his feet trashed in the icy water. Sgt. Darvil Price seized John's arms and hauled him from the water. He got out with a scraped forehead and a bloodied nose. A cool and quiet fellow, John told everyone in the mess hall that night he had parked the tractor in "the underwater garage."

Capt. Smith and George Cvijanovich told us stories of losing vehicles like this on Alpha 1.

Vehicle drowning is a continuous danger on thin ice. Only three days (August 20) after Wandishan's narrow escape, Sgt. Lincoln (Link) Bailey slipped into the edge of a melt hole behind the one latrine we all shared. The right side of the D-4 he drove tipped into the pool, which did not have a bottom. Bailey jumped out, checked the situation, then climbed back in to shut-off the tractor's engine. Water now covered the right side of the roof, cab, and front blade.

Wandishan backed-up a D-6 and hocked its winch cable to the left side of the D-4. The larger vehicle grinded ahead, and pulled the D-4 up a bit. But the smaller tractor got caught on the icy edge of the hole.

Wandishan unhooked the bigger tractor. He moved it around and got a better angle of pull by hooking up to the winch on the D-4. That worked for a short way then the winch cable snapped. The tractor settled down slowly then rapidly as the water's hold increased. It soon sank out of sight in a funeral of bubbles.

# Chapter VII

## WAITING for the SUN to COME DOWN

## THE RUNWAY BLUES

The sun slipped below the horizon for the first time in months on August 24, ending our days without nights. Station Charlie had drifted to within 725 miles of the North Pole and 150 miles east of the International Date Line. Temperatures that day reached 30 degrees, not punishing cold but punishing nevertheless. It was too “warm” to strengthen the ice floor we lived on and strengthen it enough for a big airplane to land.

The runway at our station and our lives remained pocked with large puddles, some of them a thousand or more feet deep. Two tractors had been “parked” down there unwillingly in the past week. Basic living necessities could be dropped by parachute. Even when ‘chutes failed to open or landed miles from our runway, it makes your day. However, parachutes are not the best way to replace sunken tractors or to pick up people who want, badly, to go home.

And things seemed to keep getting worse. On Aug. 24, John Hagey drove a heavy plow along the runway edge, pushing snow and ice into any hole that would hold them. At an opening, which did not look as wide as it was, the plow began to slip downward. Only its large front blade kept the machine from sinking all the way.

His mates quickly hooked the plow to a D-6. The tractor pulled the plow, but the cable connecting them snapped. A swinging metal chain makes a lethal weapon, but Hagey stayed in the driver’s seat doing what he could to save the plow. A second rescue try with the D-6 pulled both driver and plow out of danger. Hagey came away with minor damage. Over a beer that evening, he had little to say about the incident.

To make the chore of getting a supply and passenger aircraft here more difficult, we received word that the runway at Barrow, our closest base, was closing for resurfacing. Captain Smith told us this airport would be shut until Sept. 16, at least. Those who hopped to get home sooner would be later.

In the meantime, science went on. We wanted to find out what animals and plants, mud and stones, water depths, seismic echoes, and currents of air and sea could tell us about the arctic. These tell--tale bits of life, mud and stones, along with maps and records of everything had to be preserved, packed and shipped to our university laboratories. Huts, hydro holes, instruments and equipment needed to be winterized for protection against higher winds, lower temperatures, and more snow. With the help of three Air Force men, I put a door on the front of our hydro hole shelter, added a board floor, and extended an exhaust pipe on the winch to carry its carbon dioxide fumes outside.

During an exceptionally clear ham radio call to Alicia, I broke the news that my homecoming would miss the vacation her employer set for mid- September. My homecoming would more likely be in late September, even October. She met the news with “whatever-will-be-will-be” words, but her voice trembled. It lacked that wonderful cheery expression that also came with her letters. Those words arrived only when enough cargo had to be moved to make the risky flights worthwhile and, of course, weather permitting.

These requirements were met on the afternoon of August 28. However, two of six parachutes failed to open. Bread arrived in scatted crumbs. Some dropped electric equipment would never be plugged in. Cigars, cigarettes, rum, and Hershey bars would be less enjoyable in small pieces. Hair oil, vitamins, and film got smashed into near or full uselessness. We picked up the biggest pieces of things, and wrapped them in a parachute that we dragged to a weasel sled. Alicia’s letters made it through in readable form; that made my day.

At the end of August, winds pushed us away from the North Pole rather than toward it. On August 30, howling gusts of 25 miles-an-hour pushed our floe, and others frozen to it, toward the Bering Strait. We also drifted over deeper water. On August 31, the ocean bottom reached 5,400 feet. In early September, it sunk to 7,200 feet and deeper. Such depths made daily lowering and hoisting of instruments much more difficult. Longer cables increased tangles, snarls, and knots.

The added cold and wind kept our hut’s heating stove less effective and more rattling to keep us awake. Stuffing blankets, wood, and what--ever into junctions between

walls, floor boards and around our single window could not made it warm enough to suit all of us. And winter had not come yet. The stoveless hydro hole shelter became a refrigerator. Low temperatures stung our ears. Hands became numb even with two pairs of gloves.

On Sept. 2, the deepening ocean floor sank us. We let out 8,600 feet of wire to lower a camera to the bottom. We doubted the water was that deep, so the wire must be snarling. Raising it to the surface revealed fouling in three places. It took until Sept. 5 to get the hang of lowering instruments on a mile or more of wire with a winch not built for that kind of work. When clear photographs and worthwhile samples of mud and stones came up, we slept better in a cold room. The knowledge of being the first team to explore that area of the world was a thrill only an oceanographer could be proud of.

By the end of the first week in September, temperatures of 8 and 9 degrees F. became more appreciated. The cold helped fill the holes in our runway faster with solid ice. Conversations in the mess hall were dominated by guesses and bets of when airplanes would land. Betting pools thrived. Dates ranged from a hopeful Sept. 16 to a more realistic Oct. 1. My money went to the latter. Funny how two weeks can become a lot longer when you want to leave than when you arrived. Crossing out dates on a calendar grew popular.

On Sept. 10, I received a message from Lamont observatory that two men were getting readied to relieve us. I did not change my wager on the first airplane, but I shaved my beard and paid Sgt. Price a bottle of beer for a reasonable haircut. On he matter of growing a beard: some guys spent a lot of time tending to almost every hair while others, including myself, just neglected to shave.

Discussions took place now about which of the four of us from Lamont would leave first. At this stage, the observatory did not need hands that could put together scientific instruments as much as those expert at repairs and adjusting machines to changes in everyday weather, depths, and other needs. George excelled at every type of maintenance and innovation, and he had worked on Alpha 1. Chuck knew more about electronics than any of us. Hank had to return to classes or miss a semester. Lamont needed someone at its observatory to reort what was achieved thus far and to pass that

information to others. Our leaders decided that Hank and I should leave first, while George and Chuck would train the replacements in the joys and miseries of Ice Station Charlie

By Sept 10, the sky after 9 p.m. often became colored with layers and streaks of pinks and purples, oranges and cherry reds. Polar bears kept as busy as scientists and tractor drivers. Close to our camp one overturned and pawed a geophone to test its edibility. I wondered if these animals watch changes in clouds and colors and learn something from them.

I also wondered about a fish we brought up from an unknown depth in our trawl. It was small and silver with big eyes and a large head tapering to a meager body. What does it eat and what eats it? How deep does it swim? How much cold, darkness and water pressure can it survive? I carefully packed it up for a trip to a Columbia University biologist who might provide some answers.

# Chapter VIII

## GOING SOMEWHERE FROM NOWHERE

## AURORA SEND OFF

Coming out of the radio shack on Sept. 12, cook John Houston spotted a young polar bear. “They’re getting closed,” he remembered thinking. Houston called mechanic John Hagey, well known to be a crack shot. Near the runway, 250 yards from the 4-5 feet-tall intruder, Hagey put one bullet into its head, and took home a handsome pelt and nice set of teeth.

Early next day, weatherman Bill Johnson came across another cub, probably related to the first one. He roused Hagey out of bed, giving him a rare story to tell for the rest of his life, two polar bear kills in one day.

Bill Johnson also got a good tale to recount. Later the same day, he and Don Gerson, on a hunting walk, met an adult female and her cub. Bill shot at them but missed. Hagey also fired at yet another bear but missed, depriving him of a story that no one probably would believe anyway. We decided the bears were attracted by sacks of bread pudding that landed under an unopened parachute.

Another bear story came from T-3 by radio. The commanding officer of that iceberg--base tuned a corner and met a cub an arms-length away. The officer called for help that came in the form of a barking dog. This distracted the bear, as did pistol shots fired at it. But neither proved to be enough to scare the animal away. Shots from a powerful rifle finally took down the marauder.

With rifles on their backs, the airmen continued the work of helping nature build a stronger runway. Scientists continued attending to instruments and winterizing their shelters. We had placed our “big-bang” seismic post, where we set-off large explosives, at the edge of our floe. To prepare it for harsher weather, I installed new piers to hold a seismometer on a mount in its ice-cave. Then I added protective coverings of metal, wood and canvas. A wind--breaker at the cave entrance completed the shed. A working test confirmed that the instrument could do its job of recording the time, direction,

intensity and duration of earth movements coming from natural quakes or men-made explosions. Next Chuck, Hank, and I did some blasting as a final checkout. After a few adjustments, all worked fine, including radio signals send to a recorder in our laboratory hut. Those who replaced us should have no problems listing to what the arctic had to tell us about itself. At the same time, bears continued to seek an easy meal of bread pudding or something with more meaty. On September 15, Gus Kelley, one the Navy employees, opened the door to his hut and met two polar bears. Kelley quickly slammed all doors, knowing that they could not stop a pair of hungry animals. Both he and hut-mate Eddie Democh grabbed guns and took down a big female and her cub.

On Septembr 16, Air Force crews measured the thicknesses of ice at several runway locations. They found it was a disappointing 6 to 8-inches thin. You can't land an airplane large enough to carry enough gas to get this far, much less to bring the relievers and other cargo we all wanted to see, on ground that lean. Some men met that news with a groaning, "will we ever get outta this place," or "I feel like the Flying Dutchman." Others emphasized the longer nights, colder days, and fact that October 1 was only two weeks ahead. The latter dwelled on the blizzard of Sept. 18, which brought 24 mile-an-hour winds, driving in snow and pilling it up two-feet high in places. Temperatures sank to 50 degrees below freezing (minus 18 degrees F.). On succeeding days, they fell to 16,12, then 8 degrees. Frostbite stung and nipped.

Numbing weather could be looked at two different ways, but a tobacco shortage brought all misery. Three weeks after the last parachute quickdrop mangled an incoming smoke supply, an un-smashed cigarette or cigar was like a precious coin. By order of Captain Smith, the few serving whole smokes, along with halves, quarters and smaller, got placed in a "free-for-all" box in the mess hall. A sign on the box urged smokers to take one smoke at a time. Non- smokeable fragments became pipe fillings, or were rolled into what passed for cigar and cigarette papers. A more successful tobacco drop was needed soon to avoid a plague of nicotine fits.

Sept. 21, an airplane took advantage of a clear sky to come over Charlie. Much needed tools and much loved beer landed safely, as did packages from my wife and my

mother. Dropped casualties included bread and movies. Fortunately, we had enough of both items.

Movies could be seen every night in the mess hall, two on weekend evenings. The hut served more as a homey kitchen than a military facility. You could walk in anytime, raid the refrigerator, play cards, or just talk. It opened a wide door between the military and non-military, scientists and support people. A morale builder building, it was the first place most of us went in the morning and the last pace we left at night.

On the parachute-drop day, we received word that the first of airplane of autumn had landed at T-3. That station boasted thick, bergy ice and lies closer to Alaska, but the news bolstered spirits at nowhereville. The nearest airport to us, at Barrow, was still under reconstruction, and Smith stuck to a first landing date for us of Oct. 1, but he added the dreaded, “maybe later.” I continued packing science samples and paperwork, as well as trimming my mustache.

On Sept.23, a four-engine, turbo-proped C-130 came over us. The crew flew low. On one pass, the plane was only about 25-feet above the runway. A big aircraft like a C-130 roaring loudly and going at 300 miles-an-hour is a sight you don’t forger quickly, even if it doesn’t land. Getting a good look at our runway was obviously the pilots’ goal. More than one of us wondered how many seats that big silver bird carried. Next day, I started adding my personal belongings to the scientific gear I was packing. One Air Force sergeant due out on the first flight, muttered, “only seven days and a wakeup to go.”

Nights came cold and dark now, sometimes with bright colors painting the sky. On September 26, aurora borealis (northern lights) appeared as long green arcs and rays stretching to the zenith. What a sight for snow sore eyes! Looking at green designs moving over black sky, you could easily imagine that living things were involved, silently checking on our lighted, humped-over huts.

They returned the next night, along with vivid greens, crimsons, purples and yellows. In forms of arcs, rays and curtains, they traveled from horizon to zenith at the urging of Earth’s magnetic field.

Auroras look splendid but airplanes were what we wanted to see now. Sept. 30, everyone agreed, looked like a good day for landing one. When nothing flew in, attention fixed on Oct. 1. That Thursday was the day Air Force commanders said all would be ready. Word came that a flight would come, then later, that it would not.

On Oct. 2, I finished packing, shaved off my mustache, and washed my bed sheets. A plane arrived, but to drop-off not pick-up. One heavy load came down without an open parachute. It missed the "drop zone" marked on the runway and broke through the mess hall roof. The cargo came to rest on and wreck tables and chairs. Our crew reacted quickly, repairing the roof with insulation taken off the supply hut roof. The job took only about an hour. The "parabomb" also tore down electric wiring that served the hall, so no food could be cooked for the remainder of the miserable day.

Mostly to kill time, I grabbed a bear rifle and walked to the floe edge where we set off seismic explosions. At east one bear had shown interest in the place. From its tracks, I judged that a large male had scratched and sniffed around our boot marks, food scraps and urine stains. I rushed back to a cold diner.

Woke up next day to hear then feel wind howling across the runway. Low clouds cut down the ceiling to about 500 feet. I didn't know if pilots would try to land under such conditions but I didn't think so. We later learned that a plane took off for our station from Alaska at 8:30 am, but the pilots turned back.

Then they went flying again at 9:30.

The sky over us cleared about 11am. Sun came out. However, the wind kept blowing across the runway at 18 miles-an-hour. That's a turn back for some pilots and a dare for others. It was a dare for these guys.

Clouds covered the sky again, but that didn't stop them. They had enough fuel for a close flyover. Some of us though that's what they would do. I turned my bed sheets in at 3 pm; I could always pick them up later.

At 3:50, the aircraft flew overhead. The pilot made a few circles at low altitude then lined up with the windy runway. He was taking the dare!

Skis under the big plane hit the ice and slid along without a single bump. The pilot stopped with room to spare. You got the feeling that he had done this before.

Several of us revealed our tension with “EE-HA” yells.

The aircraft brought letters and two packages from my wife. I stuffed the letters and everything not edible into my pockets then gave the rest to Roy Willie and Tom Merron, who replaced Hank and me. Roy, a young man, appeared enthusiastic and friendly. Tom was older and quiet with a “right man for the job” look. A third passenger, Dan Hale, spent a year in Antarctica at the same time but a different station than me. We had no time to reminisce. He replaced a University of Washington oceanographer, and looked very interested, or shocked, at what he saw or did not see.

Hank and I climbed into the aircraft and helped load outbound cargo. After what seemed like hours of checking everything and revving-up the engines, we started down the runway. After watching the landing, I felt no fear of the take- off. We went into the air at 5:45 pm.

I looked back at “Nowhere” and thought, “next stop is somewhere.”

Nature provided us with a stunning send-off. Cutting through the black sky around us came a dazzling aurora of green, red and purple. It was the best one I’ve ever seen!

## END

P.S. Station Charlie never made it to the North Pole. In November, its ice floor broke-up too much to live on, so the station had to be abandoned.

Victor Vescovo is leading the first-ever manned expedition to the deepest point of each of the world's five oceans. In conversation with TED science curator David Biello, Vescovo discusses the technology that's powering the explorations â€” a titanium submersible designed to withstand extraordinary conditions â€” and shows footage of a never-before-seen creature taken during his journey to the bottom of the Indian Ocean. Experts estimate that 71 percent of the Earthâ€™s surface is completely covered by water with approximately 96.5 percent of this water being ocean. There is technically one global ocean, uninterrupted by land, but we generally refer to it by its five distinct basins: the Pacific, the Atlantic, the Indian, the Southern, and the Arctic. They are aptly named for the region of the world they are located. The boundaries between these oceans have changed throughout history for various geographical and political reasons, and for all we know, they might change again. In the meantime, the following artic Despite the ocean covering more than 70% of the Earths surface, less than 5% has been explored. So what is at the bottom?Â  Essentially, no one is certain of the things that lie at the bottom of the sea. The oceans deepest darkest deep depths have proven more challenging to reach than traveling to the moon. In all of human history, 12 people have reached the moon, while only three have reached the bottom of the deepest part of the ocean: the Challenger Deep. The deepest point- located within the Marina Trench, reaches nearly 10,000 meters deep - beyond the depths which light can reach. It was January 23, 1960, when a team of scientists set out to make the expedition to the bottom of the Challenger Deep. The seabed (also known as the seafloor, sea floor, or ocean floor) is the bottom of the ocean, no matter how deep. All floors of the ocean are known as 'seabeds'. Most of the oceans have a common structure, created by common physical phenomena, mainly from tectonic movement, and sediment from various sources. The structure of the oceans, starting with the continents, begins usually with a continental shelf, continues to the continental slope â€“ which is a steep descent into the ocean, until reaching