



Eureka 1956. © Tom York

Eureka

First of five JAWS

By Season Osborne

John Gilbert was dubbed a greenhorn when he arrived at the Eureka weather station on Ellesmere Island. Radio operators were in short supply in April 1956, so the 19-year-old, who had recently finished training, was sent to replace an ill operator who was evacuated out.

Eureka today. © Pierre Fogal



The weather station was less than a decade old when Gilbert got off the D'Iberville icebreaker he had boarded in Resolute. Eureka, established in April 1947, was the first of five Joint Arctic Weather Stations (JAWS) established in the High Arctic islands.

Realizing that the Arctic air mass had an enormous effect on weather in both Canada and the United States, both governments agreed to set up stations to jointly study the weather to help improve their weather predictions. Eureka, at 80°00' N, 85°56' W, was chosen because it was a sheltered spot on the Fosheim Peninsula in central Ellesmere Island. The other stations were built at Resolute on Cornwallis (August 1947), Mould Bay on Banks (April 1948), Isachsen on Ellef Ringnes (April 1948), and Alert on Ellesmere (April 1950).

In 1947, eight men were left at Eureka. The roles were split between the two countries. The staff consisted of four meteorological technicians (met techs), two Canadians from the Meteorological Service of Canada and two Americans from the United States Weather Bureau; two radio operators, one Canadian and one American; a mechanic who looked after the station's equipment and power; and a cook.

The met techs focussed on upper air measurements, while the radio operators took meteorological measurements on the ground. This was still the situation when Gilbert arrived nine years later. It was the reason he had been given meteorological training. He would be a weather observer, as well as radio operator.



John Gilbert at the radio-communications station CHS20. © John Gilbert

“Every three hours, we had to go out to the Stevenson screen [a raised box with louvered sides that protect the meteorological instruments inside from the elements], open it up, take the current temperature, maximum and minimum temperatures. Using other instruments, we’d measure rainfall, wind speed and direction on the ground,” says Gilbert.

Twice a day, the met techs, working in pairs (one Canadian, one American), would release a weather balloon with a radiosonde instrument attached to it that sent back information on atmospheric and barometric pressure, temperature, humidity, and wind speed via radio signals. One met tech made the





Filling the radiosonde balloon before releasing it. © John Gilbert

hydrogen, filled, and released the balloon, while the other lined up a big dish-type antenna with the radiosonde signal box, and tracked the ascending balloon.

“Some balloons went to 100,000 feet [30.48 kms] and must’ve been the size of Walmart by the time they broke,” says Tom York, who was a met tech at Eureka in 1961. “They were made of a special type of rubber that allowed it to expand as the pressure decreased. As the balloon rose, it would get bigger. Hydrogen would take up more space inside the balloon.

Between 70,000 and 110,000 feet would be the height they’d go before they broke.”

York explains that the balloons were launched 12 hours apart on Greenwich Mean Time (GMT). It was part of a concerted global effort to study weather, with meteorologists at 1,300 upper air stations around the world conducting radiosonde readings at the same time. The met techs would take all the readings, fill the information in spaces on preprinted forms, then give them to the radio operators to transmit.

“It was a complicated process,” says Gilbert. The met techs would code it and give it to me, and I’d send the report by Morse code to Resolute. Then it would be sent to Montreal, and then go to the rest of the country and get on the international circuit.”

Eureka is a stunning spot, protected from the northwestern winds by surrounding hills, with incredible views of Ellesmere’s mountainous terrain beyond. Eureka has the lowest average annual temperature (-18.8°C), and the least precipitation of any weather station in Canada, being considered a polar desert. Despite the short growing season, many colourful flowers grow on the surrounding tundra. It is also home to a variety of Arctic animals, such as muskox, wolves, Arctic fox, and hares. The wild-life and environment provide plenty of photo opportunities,

Releasing radiosonde. © Tom York



and Eureka had a darkroom so staff could develop their photos.

York was at Eureka from May to November, but Gilbert spent 18 months and two dark periods there. He recalled the sun set October 24 and returned February 22. There were radio communications, but no radio broadcasts, television, telephone, or satellite connection with the south then. But the station was well stocked with books, board games, and a pool table. The men also passed the time hiking, fishing, and exploring the surrounding land.

The station was resupplied by ships from the south in the summer. There were two airlifts a year when planes came in with mail, and a parachute drop of packages at Christmas.

“By end of May, the airstrip was unusable because permafrost was coming out of the ground. We had to wait until September before a plane could land again,” says Gilbert. “We put out flares, in the shape of a big cross, so they’d know where to land. The landing lights were coffee cans full of toilet paper, soaked in diesel oil.”

By the 1960s, the runway was maintained so it could be accessible all summer.

The Americans withdrew from JAWS in July 1972. Eureka and the four others became the High Arctic Weather Stations. Eureka has been continually staffed. Today, its 10 to 12 Environment Canada employees live and work there on a rotational basis. Most are on three-month contracts and not year-long ones, as in Gilbert’s time.

Telephone and television arrived in 1982 when a satellite receiving station was established at nearby Skull Point. Internet became available in 1998. So, those based at Eureka are no longer isolated—at least not virtually.

In addition to weather station personnel, Eureka is a stopover for researchers flying in and out of their field sites in Quttinirpaaq National Park, north of Eureka. Since 1994, Eureka has provided living quarters to researchers working at the Arctic Stratospheric Ozone Observatory (ASTRO) lab, 14 kms west of Eureka. ASTRO closed in the early 2000s, but the facility reopened in 2005, as the Polar Environment Atmospheric Research Laboratory (PEARL). Eureka is also one of the last stops in Canada before the North Pole, where those making the trek meet up and restock.

As for weather, upper atmosphere and ground weather observations are still made at Eureka much like they were when Gilbert worked there.

“They still have a Stevenson screen, as electronics tend to fail in the Arctic because of wind, weather, and -50°C temperatures.



Lowell DeMond, a Canadian met tech, tracking the radiosonde balloon, 1956. © John Gilbert



Stevenson Screen (or instrument shelter). © John Gilbert

The old mercury thermometer never fails,” says Al Gaudet, who was station manager at Eureka from 1999 to 2018.

Radiosonde balloons continue to be sent up twice daily at 11:15 and 23:15 GMT. However, now the radiosonde instruments instantly relay data to a computer at the station, which sends it directly to the Meteorological Centre in Montreal. The need to transmit information south via Morse code has been eliminated, as well as the job of radio operator.

Seventy-four years after it was established, Eureka continues to collect daily meteorological information that is still an important contribution to our knowledge of weather that impacts North America. **ΔB**

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