

Dr Elizabeth Killick: obituary

Terrifying naval engineer who liked a pint and developed radar and torpedoes

Elizabeth Killick was a brilliant, if at times irascible, engineer and electronics specialist who devoted her working life to classified research and development of radar and weapons systems for the Ministry of Defence.

So influential was Killick — always known as Betty — that the radar systems used today on some Royal Navy warships, and the torpedoes fitted to submarines and aircraft, owe many of their design characteristics to the work that she led in the 1970s and early 1980s.

Described by a former colleague as “slight, small, thin and wispy”, with steel-rimmed glasses, a ponytail and a parting that made her look somewhat severe, Killick was feared and respected in equal measure by those who worked with her.

Her rise in the rarefied world of secret defence research was nothing short of spectacular. Her early work centred on what were then revolutionary developments in defence radar and sonar systems, before she moved to focus on equally transformative approaches to torpedo design.

Having initially been based at the Telecommunications Research Establishment at Malvern in Worcestershire, she later moved to the Admiralty Underwater Weapons Establishment (AUWE) at Portland in Dorset. At her peak she was deputy chief scientific officer and head of the weapons department at Portland.

Under her direction in the early 1980s, the AUWE developed new homing, propulsion and guidance systems for torpedoes that were incorporated into the Spearfish weapons used in submarines, and the smaller Sting Ray light torpedo deployed from helicopters and aircraft.

At Portland many colleagues used to refer to the main building as “Betty’s Hilton” because of her commanding presence. Other women worked at Portland and some led research groups, but none had the same seniority; indeed, it was unheard of in the late 1970s for a woman to lead a department in the way that Killick did.

However, she utterly rejected the notion that she might be some sort of trailblazer. Whenever she detected people trying to promote her as an example of a successful female scientist and engineer, she would angrily shut down all communication.

A couple of years ago the Women’s Engineering Society attempted to make contact with Killick with a view to interviewing her about her career, but she gave them short shrift.

In a response given through a third party it was made clear that she was not impressed. "Dr Killick was apparently very irritated to have been contacted in the context of an excellent 'female' engineer," the society was told. "She prefers to be regarded as an excellent engineer with no reference to her gender."

As for equality, Killick was all for it. When she started work at Portland there was a stipulation that women had to wear skirts. The rule was brushed aside on Killick's first day at work; she arrived in trousers.

While she was never less than outspoken, Killick was, paradoxically, shy and would say nothing if she had nothing to say. Yet colleagues feared her temper and she had a knack of keeping them on edge. The joke at Portland was that she would whip people with the large rubber snake she kept on her filing cabinet, although she never did.

After she left Portland, she went to work for the industrial conglomerate GEC, which was building the torpedoes that her team had developed, but Killick did not last long with the company. She soon fell out with Arnold Weinstock the managing director (obituary, July 24, 2002). After their final confrontation she was said to have thrown her company car keys at him and stormed off.

She was unusual in that, although she became a department head and had several hundred people working under her, she was able to discuss their individual workloads in fine detail. She did not suffer fools and once famously remarked to a senior manager who asked her about a technical issue: "There's no point in describing it to you, you wouldn't understand."

There was another side to her character, however. Colleagues recalled that on trips to the Pentagon to discuss mutual defence interests, she had her American counterparts in stitches over her very English irreverence. On one occasion someone working for her had followed a line of research that failed. "I can't believe you could be so stupid as to believe that would work," she told him, glaring, before breaking out in laughter and suggesting that they go to the pub.

Among her charges at Portland were many who found her utterly inspirational and would quote her catchphrase to each other when they came up with new ideas. "That's great," she would say, "we can go with that — all the rest is mere engineering!"

Elizabeth Audrey Killick was born in London in 1924, one of the two daughters of George Killick and his wife, Winifred (née Baines). Her father was a chartered accountant who was appointed OBE in 1954 for his work as director of finance at the Cotton Board. Her mother's father was a political agent, and her maternal uncles worked in insurance and

at the London Stock Exchange. Betty was sent to Streatham and Clapham High School while the family was based in Streatham, south London. Her mother died when she was young. An early memory was riding a pony across the local common before the war. The family later moved to Cheshire to avoid the Blitz.

After joining the Women's Auxiliary Air Force, Killick worked as a radar mechanic, which sparked her interest in engineering. She was demobilised in 1947 and became a laboratory assistant at the RAF Institute of Aviation Medicine. She later studied at St Andrews University, from which she graduated with a degree in natural philosophy in 1951, and she made regular donations to the university throughout her life. She received an honorary doctorate from St Andrews in 1998.

After graduating Killick joined the Admiralty Signals Establishment near Portsmouth and quickly made a name for herself through her work on radar. In October 1966 she became the first woman to reach the rank of senior principal scientific officer. She moved to the underwater weapons establishment in 1969.

Killick was elected a fellow of the Institute of Electrical Engineers in 1980 and two years later became the first woman to be elected to the Fellowship of Engineering, now the Royal Academy of Engineering. In its citation the academy highlighted her "thorough grasp of fundamentals", her "imaginative and creative approach to new problems", and her "sound understanding of practical engineering constraints and of operational requirements".

The citation added that she "has the respect and admiration of those who have worked with her and all who have had the opportunity to appreciate the immense personal contributions she has made to radar and sonar related developments in defence electronics".

After her retirement, Killick became a board member of the Marine Technology Directorate, which is responsible for facilitating projects between industry, academia and government in research, education and training in marine technology.

Killick never married. Her favourite drink was a pint of beer and she enjoyed skiing, making regular trips to the Alps, and sailing in the Greek islands. She was fascinated by local history and archaeology, and loved the English countryside.

In later years she lived in the West Sussex village of Stoughton, where she died. She recently made a significant donation to the church in the village, which paid for the restoration of several of its outer walls. The church dates from 1050.

Killick was prepared to donate further funds for more work on the building, but she demanded complete control over how the money was spent. When that was not forthcoming, Killick, true to character, walked away.

Dr Elizabeth Killick, naval engineer, was born on September 10, 1924. She died of a heart attack on July 7, 2019, aged 94

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