

EXPLORATION Edmund Joseph Longyear

Edmund Joseph Longyear founded the company EJ Longyear (which has now become Boart Longyear) in 1890 when he “inherited” an old abandoned diamond drill on the Iron Range in Minnesota.



EJ Longyear

His company basically invented contract diamond drilling and most of the drills and in-hole tools necessary to accomplish that expensive and necessary task. Many don't realise that the company was also very involved in contract geological services, contract mining and shaft sinking in the early part of the 20th Century. Longyear's company's wireline-retrieved 'Q' core-barrel revolutionised the exploration business in the 1960s and is still the standard used in the business today (in only slightly modified form). This innovation so reduced the cost of drilling that it could be suggested that many deposits were able to be found and delineated with the funds saved versus the conventional methods of core sample retrieval.

EJ Longyear's historic first diamond drill site on the famed Mesabi Iron Range of Minnesota was the beginning of a new era in iron and mineral exploration, and, under his technical direction, the

Mesabi Iron Range became one of the largest regional areas of diamond drilling the world has ever seen.

In 1888 Longyear was a member of the first graduating class of Michigan College of Mines in Houghton. Later that year, he directed exploration and diamond drilling for his cousin, JM Longyear, on the eastern end of the Menomonee Range in Michigan. This was his first connection with diamond drilling. In the meantime, reports were coming in from northern Minnesota of the possible existence of a new iron range, and, on May 22, 1890, EJ Longyear arrived at the Mesabi Range. For the next 35 years, he was closely tied to the exploration and development of the Range. He brought in the first diamond drill to be used there, and, on June 3, 1890, his thundering steam engine began driving its drill with a diamond bit. He eventually directed the exploration of 7,133 test pits and diamond drill holes across the iron ranges.

In 1903, Longyear and John E. Hodge formed a manufacturing partnership called Longyear & Hodge, expanding their business to include contract drilling, shaft-sinking, mineral ventures and related consulting work.

The Longyear and Hodge partnership merged with Longyear's separate contract drilling company to form EJ Longyear Company. The company's first price list in 1912 featured 19 drill models with drilling capabilities between 750 and 5,000 ft. Those drills were powered mainly by steam engines, which later would be replaced by internal combustion engines developed in the 1920s. The company expanded rapidly in the US and began drilling for copper in Cuba – its first international project.

It was in 1911 that the EJ Longyear Company expanded its activities with the addition of a contract shaft-sinking division and in 1914, John C Greenway hired him to send a diamond drill

to Arizona; a year later Longyear had six drills in operation at the New Cornelia mine of Phelps Dodge Corporation. This was the first successful application of diamond drilling on a low-grade copper deposit. The manufacturing activities of the company grew from a small diamond drill repair shop started in 1902 to several large factories and ultimately one that ranked as the largest manufacturer of diamond drills in the nation.



Original Edmund Longyear drill site on the Mesabi Range, June 1890

Between 1930 and 1950, the company continued expanding internationally, forming its first foreign subsidiary in Canada and signing its first contract for work in Africa. In spite of the stock market crash of October 1929 and the subsequent Great Depression, the 1930s saw improvements in diamond drilling technology, including the use of industrial-quality diamonds mined in Africa that were called “bortz”.

In 1936, South Africa’s Anglo American formed Boart Products South Africa, later to become Boart International. The new company developed the first mechanically set diamond core bits, which proved less expensive than the hand-set core bits that used more expensive Brazilian diamonds (carbonados). Longyear’s business gradually improved in the 1940s in response to expanding worldwide mineral exploration.

Growth in the 1950s fuelled new technology, and it was in 1953 that Longyear applied for a patent on the first wireline core retrieval system, the Q® Wireline System, an innovation that revolutionised the diamond drilling industry by increasing productivity on site and making tripping core from the bottom of the hole safer for the drilling assistant. The advantages of the genuine Q system quickly generated industry-wide adoption of Longyear’s wireline technology, securing the company’s place in the history of drilling technology. The Q® Wireline System became the mark by which all future innovation at the company would be measured.

In 1974, Boart International (Johannesburg, South Africa) purchased all outstanding shares of Longyear, becoming the company’s sole owner. With the newfound technical talent and capital investment from Boart International, Longyear became the leading manufacturer of diamond bits.

In the 1980s, Boart Longyear engineers secured a reliable source of high-performance synthetic diamonds, which triggered the development of a revolutionary bit design - the impregnated diamond bit. With decades of powder metallurgy experience behind them, Longyear engineers set out to develop a new crown that consisted of synthetic diamonds evenly distributed throughout a composite matrix. This new design could drill further and faster than surface-set bits and cut through much harder material. Development and innovation continue to this day, following the great example set by EJ Longyear.

“We were excited to hear that Mr Longyear had been nominated for this international award. As an early leader and innovator in exploration mining, he helped set the stage for our industry to grow to where it is today,” said Richard O’Brien, Chief Executive Officer of Boart Longyear. “Boart Longyear continues to honour his legacy by developing innovative drilling methods, performance tooling and equipment.”