Mine hoist intrigues historians, architects

Built in 1864, it's still steaming along

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avery island - Shifts of miners make their daily descent to 1,300 feet below the ground, digging out blocks of salt for AZKO/International Salt Co. They have the help of modern technology. Vehicles move them along inside the shafts. As they remove the salt from the walls of the mine an electric conveyor system takes their find to the surface for processing.

The hoist was made of cast iron, brass and steel by Vulcan Iron Works of Wilkes-Barre, Pa.

Nothing out of the ordinary - except for a 125-year-old steam-driven hoist that's in near perfect shape and is still being used in a mine shaft that is 100 years old.

The age and condition of the hoist are extraordinary enough for the National Parks Service to have sent a team of architects and historians to document it for the Library of Congress. Not far from the miners, the Historic American Engineering Record team is uncovering the history of the Avery Island salt mine, before modernization takes over completely.

The HAER team, which is headed by USL architecture professor Dan Branch, is composed of college interns and foreign architecture graduates. The team began its study in June, and will release a report in September.

"You just can't believe something that old is still running like a clock," said historian Richard Terry of England. "It's a very clean machine, considering its age. With all the salt around it, they have to constantly maintain it.

The hoist operates with twin steam engines and pistons on either side of a main drum, Terry explained. The drum has a single cable attached to it, and is arranged so that while one cable is lowered down the shaft, another is simultaneously raised.

"I haven't seen a hoisting engine like this before," Terry said. "It's similar to engines used in cotton mills - the twin engines side-by-side.

Company documents show the hoist was purchased second hand and set up for operation in 1899, Terry said. It was made by Vulcan Iron Works, of cast iron, mild steel, and "quite a few brass pieces" in 1864. As best as he can tell, it was transferred to Avery Island by rail from a mine somewhere in the northeast United States, Terry said.

The machine has retained its near-perfect condition through endless washings and repainting, Terry said. Care is especially required with salt all around.

"The whole purpose for keeping it clean is that the salt and humidity combined have a very high corrosive value," he said.

On a regular basis, the hoist is wiped down, and oiled heavily, he said.

In addition to the hoist, the HAER team is also fascinated by the original breaker building - where the salt chunks are broken and shaken into different degrees of fineness.

For safety reasons, the hoist is now used exclusively for transporting supplies. Miners are brought in and out of the mine with an electrical hoist, Terry said.

John Montgomery, a USL architecture graduate doing intern work on the project, said "In essence, the original core of the salt mining operations has remained intact for 100 years.

"The structure is still standing, and looks like it could stand quite a while," he said.

The hoist engine is located in a building 35 feet from the tall, wooden, breaker building, which straddles the original shaft. The breaker building is where the salt chunks are processed, by crushing and shaking, Terry explained.

Built in 1899 when the shaft was dug, the breaker building also has caught the fancy of the HAER team.

"This is an eight-level structure, 130 feet high, built with no cranes or anything like that," Montgomery said. "It's an engineering marvel by today's standards - how they were able to build it back then, I don't know.

"It's in incredible shape," he said. "They removed the siding in 1938 and put on corrugated fireproof asbestos, but otherwise, it's the same frame."

Later, an addition was made to the original building so the salt could be finer, and in 1932, an evaporation building was added. Eventually, processing for block salt for cattle was included in the operation, Terry said.

The HAER team learned that another steam engine was used at the site, which operated a "race rope," Terry said.

That was a series of ropes attached to the main drive pulley, with the pulley attached to another system by rubber belts which altogether drove the crushers and the shaking screens in the breaker building, Terry said. "It was on here when the mine opened in 1899 and lasted until 1922, when electricity was generated on the site."

"At that point, each grading machine had its own power, and the rope machine became redundant," he said. "It was taken away, and we don't know where to."

In 1884, the entire mining operation was modernized with the introduction of a system of conveyors, he said, and the original shaking and grading machines were removed. About all that's left are the old steam hoist and the breaker building, and, according to Terry, AZKO/International is about to modernize again.