

Silver King Mining Company: Ore Mill
Southwest end of Woodside Gulch, Park City West
Park City Vicinity
Summit County
Utah

HAER No. UT-22-B

HABS
UTAH,
22-PARK.V,
3B-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
Heritage Conservation and Recreation Service
Department of the Interior
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Silver King Coalition Mine
Tramway and Ore Loading Station
HAER- UT-22B and UT-22C
(cover)

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Historic American Engineering Record

Silver King Coalition Mine

Tramway and Ore Loading Station

UT-22B and UT 22-C

Location: Park City, Utah

Date: 1900-1901

Owner: Silver King Coalition Mine

Condition: Abandoned

Significance: Demonstrates standard ore-transport practices
and reveals level of automation achieved in
early 20th Cv. mining facilities

Historian: T.Allan Comp, PhD, 1973

SILVER KING COALITION ~~MINE~~
TRAMWAY AND ORE LOADING STATION

At the beginning of the twentieth century the Silver King Coalition Mine in Park City, Utah, was both the largest producer of ore and ore-concentrates in the region and the largest dividend-payer in the state. Located a mile and a quarter south of Park City, at the head of Woodside Canyon, the Silver King plant was widely acclaimed as the most complete and efficient in the district.

One major problem encountered by the Silver King was the transportation of its rich ore and concentrates to the tracks of the Rio Grande Railway and the Union Pacific Railroad in Park City. The road from the mine and mill to the railroad was steep and winding: heavy winter snows and spring rains often made it impassable. The solution to this problem was an aerial wire-rope tramway connecting the workings of the mine and mill with an ore-loading station or tibble on the Park City railhead. Such aerial tramways were nothing new to Park City, or to Utah, but the Silver King does serve as an example of this type of ore transport system and of the level of automation achieved in early twentieth century mining facilities.

Designed and erected under the supervision of Mr. J. Breckenridge Fleming (Mechanical Engineer for the Silver King) and Mr. Stephens (Superintendent of Construction), the tramway and ore tippole were part of a larger construction project that included a 250 ton-per-day automatic ore sampler. This sampler was a five-story structure in which ore from the mine and concentrates from the mill were crushed, graded, and sampled for analysis by the Silver King assay office located nearby.* The crushed and graded ore and concentrate were then stored in four 250-ton bins ready for loading on to the tramway. Both the sampler and the tramway and loading station were put into commission on June 1, 1901.

The line of the tramway ran along the ridge of hills to the north of the mine and then down a rather steep incline to the loading station. Over 7,000 feet in length, the tramway cables were carried down the 1,000 foot descent on thirty-nine steel towers varying in height from sixteen to sixty-five feet. These towers were fabricated in sections of 4X4 inch angle iron by the Gillette-Herzog Company of Minneapolis, Minnesota.

Cables, buckets, and other related pieces were built on the Finlayson pattern by the A. Leschen and Sons

*The best ore from the mine was shipped directly to the smelter while lower grades were milled or concentrated before being sent to the smelter.

Rope Company of St. Louis. Two cables were carried on each side of the towers: a stationary or standing cable carried the weight of each bucket, and a moving or traction cable pulled or moved the buckets. Both cables were made of crucible steel and had a breaking strain of 244,000 pounds per square inch. The traction cable was three-fourths of an inch in diameter, while the standing cable was one-and one-eighth inch in diameter on the downhill side and one inch in diameter on the uphill side.* Idler pulleys on each tower for the traction cable were babbited with a self-lubricating compound and required little or no attention. There were eighty buckets on the line spaced 175 feet apart, each with a capacity of 500 pounds of ore and concentrate on the downhill run and 325 pounds of coal for the return trip. The coal was used to fire the boilers for the several steam engines employed at the mine and mill. It should be added that most of the supplies for the mine-- timber, oil, powder, etc.-- were carried to the works on the tramway. The 1,000 foot fall allowed the buckets of ore to be propelled by gravity, although when coal was sent up the tram additional power was supplied by the 125 H.P. Corliss steam engine in the sampler building.

*The traction cable was apparently replaced by November, 1913. Howard reports a running or traction cable of six-strand, nineteen-wire, Lang-lay type, seven-eighths of an inch in diameter and manufactured by Robbing of extra strong cast steel.

The tramway entered the ore loading station in Park City eighty-five feet above the ground at the fourth-floor level where the automatic unloading machinery as well as coal and supply loading apparatus were located. Ore and concentrates were dumped into one of four 250-ton bins situated above the railroad tracks running on each side of the loading station. There was room for six thirty-four foot railroad ore cars on each track and each track was built over a Fairbanks, Morse and Company seventy-five-ton scale. Despite the seemingly complicated process of getting ore and concentrates from the mine and mill to the railroad cars, it actually required only one man to load the buckets at the upper terminal and unloading was accomplished automatically. In fiscal year 1912-1913, one engineer-journalist reported the tramway operated at the low cost of 6.4 cents per ton.

There are wire-rope tramways operating today in Park City, but now they carry skiers to the snow instead of carrying ore over it. A good example of contemporary engineering in its day, the Silver King tramway is now dismantled and the ore loading station ^{has been} ~~functions primarily~~ ^{abandoned.} ~~as the subject for tourist photographs.~~

T. Allan Comp
Historian: HAER
January, 1973

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Boutwell, James Mason. Geology and Ore Deposits of the Park City District, Utah. Professional Paper 77, United States Geological Survey. Washington: United States Government Printing Office, 1912.

Best general source on Park City mines. One paragraph on the tramway and ore tipple.

Callow, J.M. and D.J. Nevill. "Description of the Silver King Sampler and Mill," The Salt Lake Mining Review. December 15, 1901. pp. 11-12.

Description of interesting engineering features of sampler with brief mention of tramway. One photograph of "Silver King Works" and several sketches -- none on tramway or tipple.

Howard, L.O., M.E. "Milling at the Silver King," The Salt Lake Mining Review. November 13, 1913. pp. 17-18.

Includes brief mention of aerial tramway; some indication of alterations and running costs.

MacVichie, D. Report on the Property of the Silver King Coalition Mines Company. n.p. December 1, 1908.

The Silver King Coalition Mines Company was incorporated in May of 1907. This stockholder's report is an extensive description of the new and expanded Silver King. Tramway and tipple mentioned briefly.

Steele, James H., E.M. "A Model Tramway and Sampler," The Engineering and Mining Journal. November 9, 1909. pp. 596-597.

An extensive description including three photographs, one of tramway and tipple.