The following paper was presented before the Nevada section of the American Institute of Mining Engineers, Friday evening by Percy G. Dobson, general manager of the Summit King Mines, Limited, operating the Dan Tucker Mine, thirty miles southeast of Fallon:

Summit King Mines, Limited, is a wholly owned subsidiary and Ira B. Joralson, of San Francisco is consulting engineer for one of Bralorne Mines, Limited (N.P.L.), of British Columbia. It is a gold-silver mine situated 600 feet south of the Lincoln Highway, 30 miles southeast of Fallon, Nevada. The original property consisted of a group of five claims, previously known as the Dan Tucker Group. Prospecting and development has extended over the last 15 or 20 years.

When we optioned the property approximately 3000 feet of work had been done, consisting of several tunnels, numerous shallow pits and the two main shafts on the west end of the property, both about 150 feet deep.

When I examined the property in September, 1938, some of the factors that appealed to me were:

(1) The exceptionally strong vein system.

(2) The andesitic country rock.

(3) The similarity geologically to the nearby Fairview and Wonder camps.

With one exception, samples from the outcrops showed very poor values. As it happened, I had recently been in charge of the examination and development of the old Milvloc property, now the Desert Silver Mine, at Silver Peak, Nevada. At that property their is a very strong vein traceable for several thousand feet, with numerous shallow shafts and surface workings, in none of which was encountered even encouraging values. At both properties the vein filling on the surface was nearly identical, being mainly quartz, pseudomorphic after calcite. As the surface conditions were similar in both properties and at
Desert Silver the good values were first encountered on the 400 level. I thought the Dan Tucker warranted further consideration on the chance the present surface was just above the zone of ore deposit. I thought the ore zone would have a quite definite ceiling and floor and, if such was the case, there was a fair chance commercial quantities of ore might be encountered at a shallow depth, and so recommended it to my principals.

Mineralization is associated with a strong compound fracture system striking easterly and dipping 35 to 45 degrees to the south and traceable on the surface for 5000 or 6000 feet. The wall rock is andesite, but, in the immediate vicinity, thin bedded limestones, schists and basalts are encountered. The ore is highly oxidized soft, crumbly quartz in veins 9 to 9 feet wide. Gold occurs in the free state and silver probably in the chloride and argentite. A light-colored mineral, thought to be electrum, has been noticed when panning. On the upper level the silver-gold ratio is about 40 to 1, while on the lower levels it is much higher, probably 70 or 80 to 1. The mineralization would be classed as a Tertiary epithermal deposit of hypogene origin.

When we optioned the property we allowed the owners to work for a certain period a high grade shoot in the east end of the 80-foot level of the Dan Tucker shaft. From an underhand stope, mined to a depth of 25 feet, they shipped a number of cars of $50 to $60 ore before we started development.

The main Dan Tucker shaft had followed what was considered the main vein to a second level 60 to 70 feet below the 80-foot level.
On this level the vein was 6 or 7 feet wide, but averaged only 5 or 6
a
per ton. After studying the structure, we decided that the rich ore
occurred in a parallel vein dipping 10 or 15 degrees steeper than the
vein the shaft followed and intersecting this vein on the 80-foot level.
With this theory in mind, we started sinking from the 80-foot level, steeplng the shaft so that it entered the footwall of the old shaft.
The first round exposed, in the footwall, a high grade streak half a
foot wide which rapidly widened east to an average of 2 to 8 feet on our
first new level, 200 feet down, which is called the 200 level.

From this stage on the property responded splendidly to
development on the 200 and 300 foot levels. Continuous ore of an
excellent milling grade has been developed for 230 feet to the east
and 350 feet to the west of the shaft. In the east end the vein is
cut off by a fault which appears to have a horizontal displacement of
at least 200 feet. The Getchell and Dan Tucker shafts were connected
by a 200-foot crosscut along this fault in which several veins were
encountered, one of which, although narrow, carries good values. In
the west end the vein was cut off by a second fault and, in crosscutting
to the north along the fault, two veins of good mill ore were encountered
about 50 feet from the drift. Near the shaft on the 300 level a very
promising vein has split off from the main vein and has been followed
80 or 60 feet to the west.

Below the 300 level the structure is somewhat complicated.
Several strong veins have been encountered on the 400 level, which is
the bottom level, but insufficient work has been done to determine the
possibilities of these veins.
At the present time we have sufficient ore developed for two years operation, with excellent indications of several years more.
The ore is to be treated in a 70-ton all-slimes counter current cyanide plant, which is now being constructed by the Southwestern Engineering Company of Los Angeles, and will be in operation by the first of the year. Mill tests were made by Bralorne Mines Limited (N.P.L.), Southwestern Engineering Company, and the Dorr Company, and the mill was designed by Mr. Fred E. Gray of Desert Silver, Inc... Tests indicate an extraction of about 94% of both gold and silver with 48 hours treatment. Cyanide consumption is estimated at 2 to 3 pounds per ton, lime 10 to 14 pounds. The ore grinds readily and it is estimated 75% will be thru 200 mesh.

Mine skips dump into a 100-ton coarse ore bin which feeds into a Pacific jaw crusher, thence by a 100-foot conveyor belt to the 150 ton fine ore bin.

From the fine ore bin the ore goes to a 5x6 Marcy mill, then a 4x20 Dorr Type DSFM Multizone Classifier, fines from which go to a 28x10 Type A Dorr Thickener, thence through three 18x18 Dorr Agitators to a 24x32 Type A4TW, 5 Tray Dorr Washing Thickener. From the thickener the pulp goes to the tailings dump and the final solution to the mill solution tanks. Overflow from the first Dorr Thickener goes to the pregnant solution tanks, thence to a 300-ton capacity Merrill-Crowe simultaneous clarification precipitation press type unit. Precipitate will be melted and gold-silver bullion shipped to the Mint.

An abundant flow of water was encountered at a well recently drilled at Sand Springs. It will be pipe to the mine through 3 miles of pipe against a head of 800 feet. Pumping equipment consists of a 2 x 2 3/4 inch Deming triplex pump for the pipe line and a 3-stage
Worthington Turbine Pump. Both pumps will be powered with a 15 HP Model 1-71 General Motors Diesel Engine.

Power for the mine and mill will be generated by two 190 HP 6-cylinder, 7" x 10", Cummins Diesel engines connected to Westinghouse generators.