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DEPARTMENT OF JUSTICE
WAR DIVISION
ECONOMIC WARFARE SECTION

REPORT ON FOLKS AND FRAZIER GOLD MINE
IN NORTHERN KOREA

September 29, 1943

Submitted by:
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Economic Warfare Section
War Division
Department of Justice
Washington, D. C.

Confidential Report
September 29, 1943
Re: Folks and Frazier Gold
Mine in Northern Korea
Submitted by: Gerald C. Riley
Economic Warfare Section
Department of Justice
Los Angeles, California

REPORT ON FOLKS AND FRAZIER GOLD MINE
IN NORTHERN KOREA

1. IMPORTANCE OF THIS GOLD AND COPPER MINE

The Folks and Frazier Mine, one of the largest gold and copper mines in Korea, is considered of great importance to the Japanese. The fact that the Japanese Government placed an embargo on the export of gold in 1933 indicates that they considered this product important as a means of maintaining foreign exchange. Copper, because of its wide variety of uses, is also extremely important. The Japanese were so anxious to secure copper that they imported it in great quantities until shortly before the outbreak of the present war.

A. Relationship to Overall Production

This mine was and probably still is one of the most important producers of gold and copper in Korea. Accurate figures on the relationship of its production to the overall production of these two metals in the entire country of Korea are not available. The informants estimate, however, placed the production of the Folks and Frazier Mine as at least twenty per cent of the total production for the entire country. With the exception of the Oriental Consolidated Mine in the extreme northern portion of Korea, this mine is the largest gold mine in the country, according to the informant. Furthermore, in his opinion, there are not more than six or seven gold mines of any appreciable size in Korea.

II. BACKGROUND AND HISTORY OF THE MINE

Northern Korea is a land rich in certain important minerals, notably gold, copper, and tungsten. These rich resources remained practically undeveloped until the end of the 19th century. In 1895 the Korean Imperial Government granted certain mining concessions in the extreme northern part of Korea, near the Yalu River, to an American missionary named Reverend John Morris; this missionary in turn assigned these concessions to a group of American and British capitalists who formed the Oriental Consolidated Mining Company. This concession com-

prised about 600 square miles. A separate report is being written on the Oriental Consolidated Mining Company. 7 Later on, other mining concessions in northern and central Korea were granted to various interests, mostly Japanese.

III. LOCATION OF MINE

The Folks and Frazier Mine is located approximately 50 miles northeast of Heijo, at a point designated by the letter "X" on the accompanying map, marked Exhibit "A". The concession comprised an area of about 40 square miles and was originally operated by the Seoul Mining Company, a Japanese organization. Folks and Frazier, who purchased the mining concession in 1925, worked for the Seoul Mining Company at this mine for 10 years prior to the date of their purchase. In 1925 they took over the operation of the mine, and continued the operation thereof until the summer of 1937, at which time they sold the mine to the Nippon Mining Company.

This mine is located in typical mountainous Korean country, approximately 50 miles northeast of the town of Heijo. The mine itself is in a narrow valley. The nearest railroad, other than Heijo, is 60 miles south, at a town called Syokori. The climate of this section of Korea is quite similar to the climate of the Middle West section of the United States. The winters are cold and snowy and the other seasons of the year correspond to similar seasons in the Middle West.

A. Reasons for Sale to Japanese in 1937

The decision of Folks and Frazier to sell their interest to the Nippon Mining Company and to retire from the mining field in Korea was not entirely voluntary. Political conditions in Japan and Korea had advanced to the point where most Americans in Korea became aware of the fact that eventual conflict between Japan and the United States was virtually inevitable. In addition, the Japanese Government, since the beginning of the early 30's, had pursued a consistent policy designed to eliminate all foreign business from Japan and its possessions. Thus, in the instant case, the original Korean concession under which Folks and Frazier operated was due to expire in 1942. This concession contained an option for renewal, but in the middle 30's the Japanese Government informed Folks and Frazier that no renewal would be granted. Also, under the terms of the concession, mining machinery purchased for the mine, and also other materials for the mine, were to be duty free. However, in many devious ways the Japanese authorities began to violate these terms and to make it very difficult for the owners of the mine to secure their necessary machinery and materials. Finally, certain underlings of the Japanese Mining Bureau advised the informants that they should sell their mine, and informants had lived too long in Korea not to recognize the handwriting on the wall. Therefore, they sold the mine in the summer of 1937 to the Nippon Mining Company, which also owned and operated a smelter at Chinnampo, and which had purchased all of the concentrate from Folks and Frazier for many years. Neither partner ever visited the mine again after the sale.

IV. TRANSPORTATION FACILITIES

The gold and copper concentrate was hauled by truck to Heijo, a distance of approximately 50 miles, and from there was transported by rail to the smelter at Chinnampo. In the early days the concentrate was hauled by bull carts, but in later years trucks were used exclusively. The road from the mine to Heijo is a dirt road covered with rocks and gravel. It is passable, although it would not be considered a good road by American standards. It freezes in the winter and thaws in the spring. Chinnampo is the port town for Heijo, and is located approximately 20 miles southwest of Heijo. The smelter at Chinnampo was the only smelter in Korea, to informant's best knowledge, except for one other small smelter ²⁰ or 30 miles north of Ginsen. This statement was true as of 1939.

A. Description of Smelter

The Chinnampo smelter is on the outskirts of the town, it consists of a series of wide, low buildings with sheetiron roofs. The outstanding landmark of the smelter is an enormous smokestack located in approximately the middle of the smelter grounds, which comprise from ten to fifteen acres. This smokestack rests upon a reinforced concrete base 100 feet square. It is of a dull gray color. Informant could not estimate the height of the stack, except to emphasize that it was very tall and easily recognizable. The reason for the extreme height of this smokestack is to prevent the fumes from the smelter from descending upon the adjoining countryside, which is largely devoted to rice fields and to deciduous fruits and orchards.

V. PHYSICAL APPEARANCE OF THE MINE

The mine itself, as far as the physical equipment is concerned, consisted of a group of contiguous buildings which contained power plant, storage facilities, and the machinery for performing the actual mining processes. A picture of these buildings is attached hereto and marked Exhibit B. This picture was taken in about the year 1935, and, according to Mr. Folks, it presents an accurate picture of the buildings of the mine, at least up until 1937, at the time of the sale to the Japanese.

A second picture, marked Exhibit "C", reveals the type of terrain surrounding the mine. This is typical Korean Mountain country. The auto road leading from the mine to Heijo is clearly visible in Exhibit "C", as is also the Korean village in the right center of the picture—home of the Korean miners.

A. Power Plant

Among these buildings the most important is the building in the right foreground which housed the power plant. This building was of frame construction, with a corrugated iron roof, (All the buildings at the mine were of this same construction). The building housed four 300-horsepower Diesel engines which were connected to generators. Three of these Diesel engines were of Japanese manufacture, the Niigata engine, and the fourth was of Swedish manufacture, an Atlas Diesel engine. These engines furnished adequate power for the operation

of the mine. No other power, indeed, was available. (We are speaking now of the period between 1925 and 1937, during which Folks and Frazier operated the mine. The original Japanese company which operated this mine received its power from a steam power plant at Heijo. There is a considerable amount of coal around Heijo which furnishes the steam power for that city. However, at the time the Americans took over the mine this steam power was discontinued and the power lines were dismantled. At the time of the sale in 1937, the Diesel motors were in good condition. However, the Japanese who purchased the mine in 1937, subsequently secured their power from the great power plant near Kanko. This power was more satisfactory because it was steadier. In all probability also, the Nippon Kogyo Kubishi Kaisha were forced by the Japanese Government to use the power from the Kanko power plant.

VI. METHOD OF OPERATION OF THE MINE

A. Cheap Labor

This Korean mine had many advantages over an American mine, chiefly because of the large supply of cheap Korean labor. The ore mined was of a low grade; in fact of such a low grade that similar quality ore could not be mined successfully in the United States. The actual pit from which the ore was obtained was located about 3500 to 4,000 feet from the buildings. The initial operation in the process of mining consisted of driving shafts into the ground. Since the mine was located on the side of a mountain, these shafts were not always driven underground but were on occasions driven into the side of the mountain. Korean hand labor was used in driving the shafts. The maximum depth of any shaft was 500 feet. Then sticks of dynamite were placed into these shafts or holes and the dynamite was exploded.

B. Loading the Ore.

If the explosion took place underground the ore was loaded into chutes and hoisted to the surface. If, on the other hand, the explosion took place above the surface, the ore was dropped into a chute and from there loaded on the cars. These cars were then taken to the mill, which was approximately 3,500 feet away from the mine. In the early days the cars were hauled by mules, but later on a gasoline engine was used. Before loading the ore on to the cars, the Korean miners tried to separate the obvious waste material from the valuable ore.

C. Processing the Ore

The ore was then dumped at the mill into a machine known as a primary crusher, which crushed the ore to a three-inch size. This primary crusher consisted of an apparatus with steel bars or jaws which descended upon the ore and split it up.

From there the ore was placed in a secondary crusher which crushed it to a half-inch or less. The secondary crusher was a machine with a concave center which agitated the pieces of ore and crushed them by a jarring motion.

The crushed ore was then conveyed to an ore bin which held 1,500 tons of ore, and was fed into ball mills. The ball mills used at the mine were known as the Harding machine and consisted of a conical mill, each containing five to six tons of steel balls.

D. Flotation Process

The overflow was then placed on flotation machines, which are machines designed to separate the gold and copper concentrate from the waste materials. This flotation machine consisted of an apparatus which stirred up or agitated the ground ore, caused the waste material to sink to the bottom, and left the concentrate on top to be skimmed off. Before being placed on the flotation machine, however, reagents were added to the crushed ore in order to facilitate the separation process. In the early days, eucalyptus oil was added as a reagent, and later on a mixture prepared especially for this purpose by the American Cyanamide Company.

E. Treatment of Concentrate

The concentrate which was skimmed off the top of the flotation machine contained a certain percentage of water. This concentrate was then poured on to a cement floor which had a fire under it, and after being dried to a five per cent mixture, was dropped into a tank. From the tank the concentrate was placed into bags, loaded upon trucks and shipped to Heijo.

The concentrate contained an average of twenty to twenty-five per cent copper. The average of gold in the concentrate was much less. There was an average of one ounce to one and one-half ounces of gold to each ton of concentrate. The concentrate was assayed at the mine and was again assayed at the smelter by the purchasers, who were always the Nippon Mining Company. The income of the owners from this mine averaged 500,000 yen a year.

F. Total Production of the Mine

During the twelve years in which the Americans operated this mine they mined approximately 1,000,000 tons of ore. During the nine preceding years the Japanese had mined approximately 1,000,000 tons of ore. Mr. Folks was unable to estimate how much more ore remained in the mine, but he felt that a considerable amount still remained.

An American mining prospector in Korea, named F. A. Smith, visited the mine as late as 1939, and he reported that the Japanese had greatly enlarged the operations of the mine; had built barracks for Japanese mine workers, and had, to all appearances, at least, continued the mining operations on a larger scale than previously.

VII. INDEPENDENT KOREAN OPERATIONS ON THE CONCESSION

During all the time that the Americans operated this mine, as well

as during the period prior to 1925, many of the native Korean population were engaged in independent mining activities of their own on the concession by arrangement with the owners. These Koreans, after securing their ore, would usually bring it to the mining mill for the further work which was necessary to be done. However, informant stated that the amount of ore mined by these independent Korean miners constituted but a small part of the total mining in the district.

VIII. SOURCE

The informant, J. R. Folks, has been in the gold mining business for the past thirty years. He is now a man approximately 60 years of age. He came to Korea in 1915 and entered the employ of the Nippon Mining Company on the mining concession which he later purchased from them. He worked for the Nippon Mining Company at this concession in various capacities from 1915 until 1925, at which time he and another American named Scotty Frazier purchased the mining rights of the concession where they had been employed and entered into a mining partnership. This mining partnership operated the concession successfully from 1925 until the summer of 1937, at which time the partners sold their mine to the Nippon Mining Company. Although informant is not a well educated man in the general sense of the term, he is thoroughly familiar with gold and copper mining, especially in Korea. At the time of the sale in 1937, informant states that he and his partner destroyed all of their records at the mine and for that reason he was unable to supply definite and accurate figures as to production.