

# Research on Wang Shi Wa Coal Mine (1953-2015)

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**Abstract:** Coal is not only the means of production, but also the means of life. Coal is the food for industry, and in the course of China's socialist construction, it is inseparable from coal. TongChuan city of Shan X Province is established by coal and prospers by mining. Wangshiwa Coal Mine is the main mine of Tongchuan and one of the "156" projects granted by the Soviet Union to China. In the history of coal development of TongChuan city of Shanxi Province, Wangshiwa Coal Mine has a pioneering position and is known as the "eldest son of the Industry of the Republic of China". Used to export tens of millions of tons of coal for the construction of new China.

**Keywords:** Wang Shiwa coal Mine, Sino-Soviet friendship, Industry eldest son

## 1. Introduction and literature review

It is an important member of 156 key projects assisted by the Soviet Union during the first Five-year Plan period. It used to be the largest mechanized mine in northwest China and the only coal industry project in central and western China. It is the living fossil of the Coal industry of the Republic of China, known as the "eldest son" of the coal industry of the Republic of China. Lu Yao "ordinary World" has its figure, the song "Sing a mountain song to the Party" has its story.

It is because of coal and prosperity, because of coal and trapped, but also because of coal and decay; There is honor and bitterness in its life, but it cannot be duplicated. Most of the researches on Wangshiwa Coal mine focus on coal mining technology. This paper explores the past and present life of Wangshiwa Coal mine from the perspective of its development history

## 2. Analysis

### 2.1. Wangshiwa Coal Mine is the crystallization of Sino-Soviet friendship

From 1953 to 1957, New China implemented its first five-year plan, which was a crucial period for the People's Republic of China to lay the foundation for industrialization. During this period, the Soviet Union assisted China in the construction of "156" industrial projects, of which 25 were coal mines, accounting for about one sixth of the total number of projects. 1953 Wangshiwa Coal Mine shaft in Tongchuan, Shaanxi became the only coal mine project in northwest China. Wang Shiao coal mine is located in the east of tongchuan city, 13 kilometers of rock back foothills, built in 1957, completed and put into operation in 1961, the design capacity of 1.2 million tons per year for the first time in 1973 has reached the design capacity, Wang Shiao coal mine is the "capable" shanxi coal, mine is the Soviet Leningrad design institute put forward the preliminary design scheme, the sino-soviet relations burst, Xi'an Coal Design Institute undertook the technical construction.

"In building this mine, the Soviet Union first sent more than 20 excellent experts to do a complete design for us. They took pains to visit the site several times to the geological data of the mining area, survey the terrain, choose the industrial square, study the mine water supply, power supply problems, choose railway branch lines and other aspects of careful guidance. The problems they help us solve, directional problems and specific problems; Some are related to the whole mine development and construction, but also some details and calculation problems; A common feature is that no matter the size of the problem, experts are always highly responsible attitude, repeated research, to help us save national construction funds, spend the least money to do the biggest thing. Wang Shiwa mine construction, condensation of the great Soviet people's labor. It is true that Wangshiwa mine is the fruit of Sino-Soviet friendship."

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Photo source: Wang Shiwa Coal Mine Archives: Photo Archives, File Number: 1-001

Figure 1: Wang Shiwa Coal Mine China's first five-year plan, one of the national "156" projects

The main shaft and auxiliary shaft designed by Soviet experts were the largest in the northwest at that time; Northwest of the most primitive and most durable coal preparation building, from construction to production, has been able to operate normally; A series of industrial relics, including the mine office building, the longest one-sided building in Asia and the mining technology of different mining stages, such as the mining, high-grade general mining and fully mechanized mining, are well preserved. All these testify to the Friendship between China and Soviet Union. Wangshiwa coal mine is an epitome of the development of China's coal industry, which is of great value to understand the mining history of Shaanxi and even the domestic coal industry.

## 2.2. Wang Shiwa coal mine resources and traffic advantages

Tongchuan, known as tongguan in ancient times, is located in weibei "black belt" on the northern edge of the Guanzhong Plain. Tongchuan coal used to produce tri-colored glazed pottery of the Tang Dynasty and Yaozhou porcelain of the Song Dynasty, and also continuously supplied to the "military and civilian" in the anti-japanese rear area. After the founding of new China, comes at a time when the country first five-year "period, the priority development of heavy industry, coal demand surge, tongchuan mining bureau in 1955, tongchuan has become a city northwest of the rise of coal industry and the largest coal production base, Wang Shiao in tongchuan region of coal as the main mining area, belongs to the tongchuan mining bureau, The field is about 7.5 kilometers long from east to west, 3.27 kilometers wide from north to south, and covers an area of about 24.5 square kilometers. The mining area covers an area of 3432 mu, which is part of the Permian coal field of Weibei Carbonite. The surface of the field belongs to the hilly highland of loess Plateau, and there is no large river water body in the territory, mostly intermittent streams. In addition to its own rich coal reserves, the opening of coal transport special line has become an important key point in the development of Wangshiwa coal mine.

In 1934, the Xi 'an section of Longhai Railway was opened to traffic, opening the door of coal production and marketing in Shaanxi Province to the outside world. Coal continued to pour into Shanxi and Henan provinces. After the outbreak of the Anti-Japanese War in 1937, Shanxi and Henan were captured, resulting in coal shortage in Shaanxi. In 1942, xiantong (Xianyang to Tongchuan) railway, a branch of Longhai Railway, was opened to traffic, and the transport and sales conditions of Tongchuan mining area were greatly improved. Xiantong Railway became the main channel for coal transport in Tongchuan area, and Shaanxi realized self-sufficiency in coal. On June 21, 1956, Tongchuan Mining Bureau approved the 12km special coal transportation line of Wangshiwa Coal Mine to connect with the Xiantong branch line. The opening of the branch line not only improved the coal output capacity of Wangshiwa coal mine, but also enabled the Soviet production equipment purchased to be quickly put into the frontline production, becoming the lifeline of coal mine supply and output.

In short, abundant coal resources, economically convenient transportation conditions, great help from the Soviet Union and the subsequent design and construction of Xi 'an Coal Design Institute, all of which prompted the birth of Wangshiwa Coal Mine and made it a key link in the development of northwest

heavy industry.

### ***2.3. The development course of Wangshiwa Coal Mine***

Site selection and initial stage of mine construction: "This mine field has been basically proved and is reliable for the construction of a shaft with an annual output of 1.2 million tons. The field uses a pair of shaft development: the main shaft and auxiliary shaft, the main shaft to lift coal and gangue; The auxiliary shaft is used for all other kinds of lifting work, such as lifting and lowering personnel, lowering timber, equipment and materials. "The initial design Specification of the Wang Shiwa Shaft of the Leningrad Design Institute volume 1," the opening paragraph records the opinions of Soviet experts at the time. From 1953 to 1954, during the first Five-Year Plan period, experts from China and the Soviet Union conducted joint site selection to prepare for the preliminary construction. In December 1957, Wang Shiwa Coal Mine was designed by Soviet experts and Xi 'an Coal Design Institute, and the construction of Wang Shiwa coal mine began. In 1960, due to the sino-Soviet relations, Soviet experts withdrew, xi 'an Coal Design Institute based on the original general plan to continue the design and construction. It was completed and handed over on November 20, 1961, and the construction period of the well was 4 years.

Development period of coal mine: from 1962 to 1970, wangshiwa Coal Mine became the most important mine of Tongchuan Mining Bureau and the largest modern mechanical shaft in northwest China after it was completed and put into operation. Because the technology is not mature enough, this period has been in the loss stage.

Coal mining heyday: 1970s to 1980s. In 1973, the annual output of Wangshiwa Coal Mine broke through the design mark of 1.2 million tons, and the highest annual output of 1.3333 million tons in 1979. In 1981, it took the lead in using high-grade general mining equipment. In 1982, it first set the highest record of the national high-grade general mining working face, with an annual output of 546,600 tons of raw coal. In 1984, it ranked third in China and won the championship in 1985.

Coal mine recession period: from 1990s to 2015, coal mine resources became increasingly exhausted, the aging degree of workers became serious, the coal market continued to slump, and Wangshiwa Coal Mine gradually went into recession. In October 2015, Wang Shiwa coal mine officially announced production suspension. At the end of 2017, Wang Shiao coal mine site will be the only coal industry sites, Wang Shiao coal industry site project for coal industry characteristics, through the 400 meters deep mine, makes the world's deepest underground Tours, popular science knowledge popularization of coal, coal mining history, in northwestern China and even the country's industrial history historical memory. The reuse of wangshiwa coal mine industrial heritage can not only alleviate employment, but also preserve the memory of coal mine industry.

### ***2.4. Wang Shiwa coal mine production***

Since the construction of the mine, the method of drilling and blasting has been used to excavate the well. Before 1964, the construction method of manual drilling, dry drilling and human tooling slag was adopted in the development and rock excavation. Transport by winch or manpower transport, roadway support to wooden shed for temporary support. Due to the poor production conditions in the early stage of mine construction, the labor intensity of workers and the low scale of tunneling, the monthly penetration was basically between 40-60 meters before 1967. In 1965, excavation Team 3 cracked the limestone smooth blasting technique and began to promote the advanced metal bolt support. In 1987, support reform was carried out to promote metal support. In 1981, high-grade general mining was adopted for the first time in the fifth coal mining area, which continuously advanced 1,500 meters. March 1997, a new set of fully mechanized mining equipment, fully mechanized mining team was established; In September 1998, another set of fully mechanized mining equipment was installed, and the second fully mechanized mining team was established. Since then, the mine mechanized coal mining rate reached 100%, all of which can not be separated from the mine technology changes and innovations,

Coal mine production is still a high-risk industry, safety production is Paramount, combing the safety accidents since the production of Wangshiwa coal mine, enough to see the limitations of coal technology and the hardship and difficulty of miners.

On November 23, 1961, coal preparation building no. 2 scraper transport plane was stuck by iron sulfide, monitor Shi Yunxiu led Li, Huang mou processing, Huang mou accidentally out of the start switch, will stand on the scraper no. 2 gate Li mou stuck to the nose, resulting in serious injury and death;

On December 20, 1969, Zhao and others by the cage down the well, due to the cold weather, freezing in the deputy shaft, in the cage down process, the lock chain and the tank door was knocked off, causing standing in the most side of the zhao fell into the shaft, died; On September 5, 1972, the excavation of five team workers ma and other three people back to the well, the left side suddenly collapsed, resulting in two deaths, 1 injured; On October 24, 1973 mining area nine workers a meng in the west face Huo coal, violate compasses operation procedures, six meters long areas there is a temporary pillar, following researchers warned him twice to temporary column, but not play all the time, the roof caving, died on the spot; April 11, 1984, mining area six cannon blast member Liu serious violations, only with 11.7 meters long busbar cannon, was hit by flying stone head, although the organization of human rescue for thirteen days, the final unfortunate death. In the age of backward coal mine facilities, coal mine safety accidents happen from time to time, coal mine safety production is directly related to the development of production, the rise and fall of the mine, the happiness of the workers and families, actively and consciously improve the safety of production, is the organization at all levels, every worker's family members of the common responsibility.

After Wangshiwa coal mine was put into production, the safety section was established. At that time, it was equipped with 9 personnel, responsible for the management and supervision of safety production. In 1982, the mining trade union set up the mass safety committee, the workshop trade union set up the mass safety group accordingly; In 1985, the mining League committee established the youth safety supervision post; In 1988, in order to put an end to underground transportation accidents and reverse the grim situation of roadway transportation safety, the mine set up underground traffic safety inspection team, which was fully responsible for underground transportation safety. In May 2000, the safety inspection Department was renamed as the Safety and quality Department, and actively adopted the "finger dictation": through miners to carry out detailed safety confirmation before, during and after operation, to minimize the safety accidents caused by personal mistakes in the process of safety production; At the same time, Wangshiwa Coal mine attaches importance to the construction of safety culture and carries out a series of safety activities.

According to the contents of "1987 Wangshiwa Coal Mine Safety Education Exhibition" in Wangshiwa Coal Mine Archives, the following table is sorted out and the data from 1961 to 1987 are analyzed. It can be seen that 172 casualty accidents occurred in the past 28 years, more than 70% of which were caused by violation of regulations, and the tragedy should not have happened. The updating of coal technology and the importance of coal safety play an important role in the safe production of coal miners. Through the death of a sufficient data, miners not only dedicated their youth, wisdom, sweat, and even dedicated their most precious life. Since 1985, Wangshiwa coal mine has carried out activities to help families of workers who violate rules and regulations, which has achieved remarkable results. In addition to various forms of safety knowledge education for workers, the mine trade union and safety supervision office also held safety knowledge competition and safety knowledge response to enhance the safety awareness of miners.

### **2.5. Wang Shiwa Coal mine contribution**

Supply coal to the country. Since it was put into operation in 1957, it has produced 49.3 million tons of raw coal for the state and turned over 18.9596 million yuan in profit to the state. In 1973, the mine reached its designed capacity for the first time, with an annual output of 1204,531 tons. In 2004, the highest annual output reached 1.668 million tons. The maximum monthly output is 183,745 tons and the maximum daily output is 7,160 tons. Wang Shiwa in the past, is a desolate scene everywhere, through the efforts of the builders, in the barren loess hills, the rise of a modern mine. Parallel development of industry, agriculture, commerce, transportation and transportation; Science and technology, medical care, culture, education to form a system, tongchuan city is one of the important towns.

Solve employment for employees. Wang Shiwa Coal Mine was built and put into operation in 1961, with a designed output of 1.2 million tons. It is a large backbone mine in Tongchuan. When the mine was put into operation, 70 people who originally built the mine stayed outside the mine. In 1961, a group of unemployed people who flowed into Shaanxi were recruited for the first time. From 1961 to early 1962, 832 people were recruited from Gansu; In 1965, 750 people were recruited from Chunhua and Changwu counties in Shaanxi. In 1968, 130 demobilized soldiers were recruited from northern Shaanxi to mine; In 1969, 400 farmers were recruited as rotation workers; In 1970, 57 workers' children were enrolled. In addition to the above recruitment way, there are from tongchuan mining bureau of other mining brothers. At its peak, there were more than 30,000 miners and their families. The mining area was like a small city. Miners and their families maintained the normal operation of the mining area with their hard work and enthusiasm for life.

In February 1966, the family service team was established, and the family members of workers formed a coal squad. In April 1967, the establishment of white ash kiln and sulfur kiln, mainly supply mine use and sale. Later, the remaining funds were used to set up a stone slag factory to help more than 160 family members and children who had difficulties due to work-related injuries and deaths. In 1969, on the basis of the original family production team to set up families Wang Shiao ore production team, mainly manufacturing coal mine production need simple tools and metal pillar, equipment and accessories maintenance, not only saved money for ore, and solves the part for the old, weak, sick, the worker and part of the family, the unemployed youth employment problem. In 1975, under the slogan of "Learn from Daqing and go to Kailuan", pig farm, vermicellia farm, soy sauce factory, Popsicle factory, tofu factory and tractor station were established successively. In 1976, the family production team of Wangshiwa Coal Mine was awarded four Harvest-35 tractors by the Ministry of Coal Industry and the provincial Coal department. In 1984, the family production team was managed by the Labor Service Company. The family production team has contributed to the development of Wangshiwa Coal Mine and solved the employment problem of about 2,100 employees' family members. At the same time to explore a self-reliance, self-reliance and self-improvement road.

Work for the miners' welfare. In 1961, when the mine was put into operation, the residential area was 59,324.9 square meters. Single worker housing in 1970 before more scattered, 3 big concentration point respectively for the North mountain, south mountain and the foot of the mountain, residential housing roughly for bungalow or cave. Built in 1970 in nanshan next half timber floor building, by December 1985, have their own design, construction, built the tower square one, two, three, four, and fundamentally solve the single workers living scattered and simple question, 1997 single workers complete set new residential bedding, sheets, and wash gargle from soup to nuts, LvGuanHua management.

When the well was built in 1958, 96 family residences were adobe houses. From 1962 to 1973, no family buildings were built in the mine. In 1981, a four-story, four-unit family house was built on the hillside of shangshan Winch Road. But families' homes are still tight. From 2004 to 2010, 17 units were built, accommodating 954 households.

In 1957, after the well was built, a staff canteen was built. The canteen was poorly equipped. The operating room and dining room were all made of linoleum, and the cooking machinery only had a few blowers. From 1961 to 1963, with the construction and operation of the mine and the scattered living of the miners, two canteen were built in the place where the workers were relatively concentrated, one canteen on the hill and the other canteen on the hill. In 1980, a Chinese canteen was built. In December 1991, the mining area built a new canteen which can supply both daily meals and large meetings, so far, the first and second canteen of the mine was cancelled.

In the mining area, in order to facilitate workers to commute, a winch road was built in 1961. In 1968, it was repaired and put into use, which saved miners and their families from having to walk 800 steps up and down the hill. Elementary school was established in 1959, middle school classes were opened in 1963, and high school classes were opened in 1971. In 1992, the mine invested 690,000 yuan to build a four-story, 2,355 square meter enclosed teaching building, which was handed over to local education authorities in 2007. In 1962, night schools for amateur workers were set up to help them eradicate illiteracy. At the beginning of 1961, the mining film projection team was established, showing outdoor; Mining investment of 1.0265 million yuan in 1981, the new city on the west side of the hill industrial square modern miners club, covers an area of 2900 square meters, 1807 seats, the spiritual life of the worker is mainly listening to the radio, open-air movies, reading novels, watching mining team "promote" MAO zedong thought of literature and art show, three: bicycles, sewing machines, watches; A ring radio, become the highest pursuit of material life in that era.

## ***2.6. The heroes of the mines***

Times make heroes, in the country is in urgent need of coal production under the background of The Times, Wang Shiwa coal mine long-term hard task has created a special fighting staff. Liang Siyun, one of the ten national representatives and a model worker, Liang Niuniu, the winner of the National "May 1" Labor Medal, and Zhang Jinju, received 13 times by MAO Zedong, emerged.

Just from the slogan of Wangshiwa Coal mine in the 1970s, you can feel the spiritual strength of coal miners at that time. 1971 battle cry: calm down, take root, unite to turn over! In 1972, the annual battle cry: learn Daqing, with the line, the whole year through millions of pass! 1973, the annual battle cry: fight upstream, concentric work, break through 1.2 million! 1974 battle cry: seize the event, together, catch Kailuan, for advanced. It is in this spirit of encouragement, mining areas emerged the coal

production of advanced collectives and national model workers.

In Wangshiwa coal mine as long as the mention of mining five areas, many people are full of pride, mining five areas has become the pride of wangshiwa coal workers. The fifth mining area was established in 1968 and equipped with high-grade general mining surface in 1981. Since the use of high-grade general mining, the average annual output of raw coal from 1982 to 1988 is 422,000 tons, equivalent to the annual output of a small mine. In 1982, 1983, 1985 are high-grade conventional first in the country, seven years in a row into the national high-grade conventional serie a team, in 1985 by coal ministry has awarded the "national coal industry exactly red flag unit", the coal ministry has also for mining five area 361 employees each awarded a medal of "red flag", wages have risen each level, Coal mining area five worthy of the "iron army" title.

The third tunneling team, founded in 1962, adheres to the production policy of "safety first" for a long time. In 1983, it achieved a good score of 485.5 in the construction of return air connection lane in the western stage of the well field. In September 1984, the whole team created a national record of 611.7 meters of monthly penetration of single hole in rock lane, and won the first place in the national Excavation Innovation competition jointly held by the Central Committee of the Communist Youth League and the Ministry of Coal. In the same year, the team was named as the National New Long March Commando team by the central Committee of the League.

Since 1978, the team has been awarded the title of national Grade A tunneling team.

Zhang Jinju, born in June 1929 in Mixian county, Henan Province, started working in the coal mine in November 1951 and was rated as the National model worker in 1953. In 1969, he was transferred to Wang Shiwa Coal Mine from Shijiahe Coal Mine. The gold digging team led by him set national records in the national tunneling competition for many times and attended the National Advanced Producers' Congress seven times. He was received 13 times by Chairman MAO Zedong, Premier Zhou Enlai and other state leaders.

Liang Siyun, born in November 1939 in Chunhua County, Shaanxi Province, came to Wang Shiwa Coal Mine as a worker in May 1966. Successively served as coal mining monitor, deputy district chief, district chief, vice chairman of mining union. Many times by the mine, bureau, city and province as a model worker. On June 10, 1973, he was received by Premier Zhou Enlai in Xi 'an. In August 1973, he attended the tenth National Congress of the Communist Party of China.

Liang Xiuniu was born in Binxian county, Shaanxi Province in March 1973. In 1978, he joined the coal mine and served as group leader, monitor, deputy district head and district head of coal mining. In 1985, he was awarded the title of "Model worker" by the Ministry of Coal Industry. In the same year, he was awarded the "May 1" labor medal by the All-China Federation of Trade Unions.

Since it was put into operation, wangshiwa Coal Mine has produced 3 national model workers, 14 shaanxi provincial model workers, 10 national advanced figures and 13 shaanxi provincial advanced individuals. What we can see from the miners in Wangshiwa coal mine is the spirit of being the first and working hard.

### 3. Conclusion

To sum up, turning over the historical picture of the development of China's coal industry, the history of Wangshiwa Coal Mine as the main mine in Tongchuan has come to an end, but the precious spiritual wealth and cultural wealth it left behind will not be forgotten. The word "miner" will fade away. It will be reborn through transformation and provide reference experience for future industrial heritage protection and development. With the development and change of coal industry in republic, Wangshiwa coal mine has fulfilled its glorious mission endowed by history.

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