

July 20, 2013

Hauling New Treasure Along the Silk Road

By **KEITH BRADSHER**

AZAMAT KULYENOV, a 26-year-old train driver, slid the black-knobbed throttle forward, and the 1,800-ton express freight train, nearly a half-mile long, began rolling west across the vast, deserted grasslands of eastern [Kazakhstan](#), leaving the Chinese border behind.

Dispatchers in the Kazakh border town of Dostyk gave this train priority over all other traffic, including passenger trains. Specially trained guards rode on board. Later in the trip, as the train traveled across desolate Eurasian steppes, guards toting AK-47 military assault rifles boarded the locomotive to keep watch for bandits who might try to drive alongside and rob the train. Sometimes, the guards would even sit on top of the steel shipping containers.

The train roughly follows the fabled Silk Road, the ancient route linking [China](#) and Europe that was used to transport spices, gems and, of course, silks before falling into disuse six centuries ago. Now the overland route is being resurrected for a new precious cargo: several million laptop computers and accessories made each year in China and bound for customers in European cities like London, Paris, Berlin and Rome.

[Hewlett-Packard](#), the Silicon Valley electronics company, has pioneered the revival of a route famous in the West since the Roman Empire. For the last two years, the company has shipped laptops and accessories to stores in Europe with increasing frequency aboard express trains that cross Central Asia at a clip of 50 miles an hour. Initially an experiment run in summer months, H.P. is now dispatching trains on the nearly 7,000-mile route at least once a week, and up to three times a week when demand warrants. H.P. plans to ship by rail throughout the coming winter, having taken elaborate measures to protect the cargo from temperatures that can drop to 40 degrees below zero.

Though the route still accounts for just a small fraction of manufacturers' overall shipments from China to Europe, other companies are starting to follow H.P.'s example. Chinese authorities announced on Wednesday the first of six long freight trains this year from Zhengzhou, a manufacturing center in central China, to Hamburg, Germany, following much the same route across western China, Kazakhstan, Russia, Belarus and Poland as the H.P. trains. The authorities said they planned 50 trains on the route next year, hauling \$1 billion

worth of goods; the first train this month is carrying \$1.5 million worth of tires, shoes and clothes, while the trains are to bring back German electronics, construction machinery, vehicles, auto parts and medical equipment.

DHL announced on June 20 that it had begun weekly express freight train service from Chengdu in western China across Kazakhstan and ultimately to Poland. Some of H.P.'s rivals in the electronics industry are in various stages of starting to use the route for exports from China, freight executives said.

The Silk Road was never a single route, but a web of paths taken by caravans of camels and horses that began around 120 B.C., when Xi'an in west-central China — best known for its terra cotta warriors — was China's capital. The caravans started across the deserts of western China, traveled through the mountain ranges along China's western borders with what are now Kazakhstan and Kyrgyzstan and then journeyed across the sparsely populated steppes of Central Asia to the Caspian Sea and beyond.

These routes flourished through the Dark Ages and the early medieval period in Europe. But as maritime navigation expanded in the 1300s and 1400s, and as China's political center shifted east to Beijing, China's economic activity also moved toward the coast.

Today, the economic geography is changing again. Labor costs in China's eastern cities have surged in the last decade, so manufacturers are trying to reduce costs by moving production west to the nation's interior. Trucking products from the new inland factories to coastal ports is costly and slow. High oil prices have made airfreight exorbitantly expensive and prompted the world's container shipping lines to reduce sharply the speed of their vessels.

Slow steaming cuts oil consumption, but the resulting delays have infuriated shippers of high-value electronics goods like H.P.'s. Such delays drive up their costs and make it harder to respond quickly to changes in consumer demand in distant markets.

Trucking goods from inland factories to the ports of Shenzhen or Shanghai on the coast and then sending the goods by ship around India and through the Suez Canal takes five weeks. The Silk Road train cuts the shipping time from western China to retail distribution centers in western Europe to three weeks. The sea route is still about 25 percent cheaper than sending goods by train, but the cost of the added time by sea is considerable.

By switching from ocean freight to rail freight, "the inventory costs and lead times will see a lot of improvement," said Jonney Shih, the chairman of Asustek, the world's third-largest player in the global market for tablet computers, after Apple and Samsung. His company, too, has begun to experiment with the Silk Road.

Scrambling for Rail Traffic

Best known in the West as the Nationalist capital of China during World War II, Chongqing is now a smoggy metropolis, its city center perched on a bluff wrapped in a bend of the Yangtze River. The urban population of Chongqing is approaching 13 million, while an additional 15 million live in nearby rural areas that also lie within Chongqing's administrative borders.

Deng Xiaoping began opening China to foreign investment in the late 1970s, and for the next quarter-century Chongqing was a place that people fled, seeking better-paying jobs on the coast. But in the last few years, it has emerged as an industrial hub of western China, attracting multinationals like the chemical giant BASF and the Ford Motor Company. H.P. took the first steps to move production west from Shanghai four years ago. Now its contractors employ 80,000 workers in Chongqing, making 20 million laptops and 15 million printers a year.

Foxconn, the big Taiwanese electronics contract manufacturer, has twice as many workers in nearby Chengdu, mainly making Apple iPads, and has been shifting production there from Shenzhen.

Tony Prophet, a senior vice president at H.P., said the company began thinking about a rail route west almost as soon as it started production in Chongqing. The company, Mr. Prophet said, was pursuing a strategy of moving products, not people: instead of encouraging a migration from inland provinces to coastal factories, H.P. would manufacture in the inland provinces and then ship the products from there.

To attract the company, the city built an extra runway at its airport long enough to accommodate Boeing 747 cargo jets. Airfreight to Europe takes only one week, including customs processing.

But persistently high oil prices made the cost of airfreight daunting — as much as seven times the cost of rail freight. H.P. was also concerned about the carbon emissions involved in airfreight, which are 30 times those of the rail or sea routes.

Trucking computers to the coast and then putting them on ships meant tying up huge sums of money in the inventory hauled across the South China Sea and the Indian Ocean. That delay would make it hard to shift sales strategies quickly in Europe if competitors came up with breakthrough products. So H.P. began looking at going west by land, across Kazakhstan.

President Nursultan A. Nazarbayev of Kazakhstan has been encouraging this idea. Last December, he called for his country to upgrade its rail network as a way to reclaim its historical role as the crossroads of Asia. “We are reviving a New Silk Road,” he said, “by setting up a Western Europe-Western China transportation corridor.”

Kazakhstan, which already has 8,700 miles of rail, is rapidly building new rail routes to its borders with China in the east and Turkmenistan to the south. One goal is to connect China through Turkmenistan to Iran, assuming that the political situation in Iran improves, said Kanat K. Alpysbayev, the vice president for logistics at Kazakh National Railways. The Kazakh rail authority is also negotiating to help fix and manage the rail network in Afghanistan, where Chinese companies are building a vast copper mine.

The effort to move more cargo from China to Europe by rail received considerable help from a development so obscure that few outside the transport sector initially noticed it. Kazakhstan, Russia and Belarus created a customs union that took full effect in January 2012, eliminating lengthy inspections at their borders with one another. The measure saved days of transit time and greatly reduced pilferage.

The Kazakhstan rail initiative has spurred regional competition. On June 21, President Vladimir V. Putin of Russia announced a \$43 billion infrastructure plan focused heavily on improving rail links to China, notably through improvements to the trans-Siberian railroad. The competition is ultimately a positive for manufacturers that make goods in China, like H.P.

The journey of H.P. computers and accessories begins in Chongqing with workers like Zheng Xiaoxue. A cheerful 18-year-old, she was raised by her grandparents on the outskirts of Chongqing; her parents had migrated to work at a plastics factory near Hong Kong in Shenzhen, where wages and benefits now reach \$500 a month.

But her parents have now returned home, complaining that the food in Shenzhen was bland and unappetizing compared with the fiery Sichuan cuisine they preferred. So instead of migrating, Ms. Zheng chose a job paying \$190 a month, as well as free room and board, at a Taiwanese-run factory making notebook computers for H.P.

“At work, we speak Mandarin, but after work, we mostly speak Sichuanese — almost all of us are from Sichuan,” Ms. Zheng said, while downing a free plate of pork and cabbage for dinner in the factory cafeteria.

For the train that Mr. Kulyenov would drive, workers loaded finished laptops into 43 of H.P.’s specially designed dark blue containers, each 40 feet long, 8 feet wide and 9 feet 6

inches high, and loaded computer monitors into seven more identical containers. The 50 containers were sealed shut with a series of locks and loaded onto a train at the Chongqing rail yard, which left the station on June 14.

It would take five days for the train, carrying nothing but H.P. equipment, to cross 2,000 miles of western China to reach the eastern border of Kazakhstan.

An Unexpected Delay

The train was punctual in reaching the Dzungarian Gate, a low, wide valley through the snow-capped mountain ranges that separates China and Kazakhstan. Chinese customs officers there opened documents that had been sealed since the shipment left Chongqing. For 49 of the 50 containers, the documents matched the cargo in every detail.

But for one of the laptop computer containers, the numbers didn't match. The documents showed that the total weight of one container was 10,135 kilograms. But the scale showed that the container weighed 10,153 kilograms — a difference of just two digits, transposed accidentally.

Hours passed on the Kazakh side as H.P. and its shipping agents hustled to amend the paperwork, which was not easy because the error was discovered at the end of a workday. After thundering across China, through Xi'an, across a corner of the Gobi Desert and skirting the vast arid wastes of the Taklamakan Desert, where temperatures can hit 120 degrees, the train simply sat. For 26 hours.

Such extreme delays are unusual — H.P. managers say the longest previous delay was 10 hours, at the Belarus-Poland border. Sea shipments have sometimes been delayed up to three days because of bad weather and other problems.

H.P. has made strenuous efforts to keep the products moving, sending representatives to remote Central Asian border crossings to explain its plans, said Ronald Kleijwegt, the company's director of logistics for Europe, the Mideast and Africa.

H.P. helped China overhaul its software for processing customs documents. China's previous system allowed clerks to choose only an adjacent country in Asia as the final destination for rail shipments, Mr. Kleijwegt said, because no one had envisioned that exports in sealed rail cars might be sent nearly 7,000 miles to destinations in Europe.

The company also negotiated special customs clearance, permitting its containers to stay locked and uninspected at border crossings along the route, although the containers are X-rayed for contraband. That was mostly to shorten the time needed for the trip, but also for

security. Two years ago, H.P. sent 200 computers in a single, unsealed container as a test shipment on a general-purpose freight train. The shipment went through comprehensive customs checks at border crossings. By the time the train reached Germany, many of the computers had disappeared.

‘Much Respect on the Track’

Once the problem of the transposed numbers was cleared up, the train crossed into Kazakhstan. An overhead crane and two cranes that looked like cottages on wheels lifted the H.P. containers off the Chinese train, and loaded them onto flat cars with wider wheel gauges in the rail yard in Dostyk on the Kazakh side of the border. Kazakhstan, Russia and Belarus, all traversed on the trip, have wide rails inherited from the Soviet rail system. China and Europe have narrower rails, so cargo transfers take several hours.

Mr. Kulyenov, a freight train driver fourth class who dreams of being promoted someday to reach the rank of passenger train driver first class, considered himself lucky to be driving the train. Sitting in the cab of a new diesel locomotive, he waited in the Dostyk rail yard for a messenger in a bright yellow safety jacket to bring him a computer printout of his cargo. When the printout arrived, he carefully made notations in the locomotive’s purple velvet-bound log book, a concession to tradition, then typed many of the same weight details into a dashboard computer that helps precisely calibrate the engine for pulling each load.

When the signal lights ahead turned from red to green, Mr. Kulyenov moved the huge train smoothly out of the yard. “It’s a new engine; it’ll have no problem,” he said.

The locomotive was built at a new factory in Astana, Kazakhstan’s capital, by a Russian-Kazakh joint venture that licensed the design from General Electric. The locomotive’s body, generator, radiator and wheels are made in Kazakhstan, but G.E. exports the diesel engine from Erie, Pa. — although G.E. and the joint venture are making plans to start building a diesel engine factory in Astana as well next year.

As the train moved forward, the lattice of train tracks in the rail yard narrowed to three, then two and then one that headed off across the flat grasslands of the steppe. Mr. Kulyenov and the assistant driver next to him, Alexander Nemtzev, 31, glanced around for the small flock of two-humped Bactrian camels that live near the rail line. They were nowhere in sight.

A few Kazakh houses lay long and low against the wind, with whitewashed walls, tile roofs and mastiffs prowling out front. Herders on horseback, wearing pointy woolen knit caps, tended flocks of sheep, cattle and horses.

Mr. Kulyenov marveled at how quickly freight trains headed in the opposite direction moved onto sidings to make way for his high-priority shipment.

“This is the first time I’ve driven the H.P. train,” said Mr. Kulyenov, who has been a train driver for eight years, “and the first time I’ve seen so much respect on the track.”

China’s smog was far behind, swept away by the crystalline air of the high, barren steppes. Dawns and sunsets played on the horizon in nearly hourlong shows of pink, mauve and purple. Kazakhstan looks a bit like North Dakota; both grow a lot of wheat. But Kazakhstan is slightly larger than the United States east of the Mississippi River, with fewer people than Florida.

The train was not built for comfort. There were no bunks for sleeping, or even bathrooms. Just as the Pony Express of the American West relied on a series of riders to carry the mail, the H.P. train relies on a new driver, assistant driver and guards to board the locomotive at stops every three or four hours. Even the locomotives are replaced with fresh ones every third or fourth stop. At each stop, railway guards dressed in black or military fatigues hustle up and down the train, checking the cars for signs of tampering. Over the course of each three-week journey, more than 100 drivers and guards board the train.

To Mr. Kulyenov and Mr. Nemtzev, the Silk Road is an abstraction, a little-remembered historical detail studied in school. Mr. Nemtzev, who grew up in easternmost Kazakhstan, remembered how he would play with little plastic trains as a boy and yearned to drive real trains someday. “I’ve never wanted to do anything else,” he said as the headlights traversed a vast emptiness. We traveled for nearly an hour at one point without illuminating a single house, car or person anywhere near the tracks.

An hour after sunset, Mr. Kulyenov and Mr. Nemtzev were replaced by the next pair of drivers. Vladimir Kolozorkin, 52, took over as the main driver. With a gray crew cut and an uncanny ability to distinguish complex patterns of railway signal lights at enormous distances, he greeted visitors with a gruff warning that rules strictly prohibited distracting the driver in any way.

But he mellowed as the hours passed, saying that he remembered from his early boyhood in eastern Kazakhstan how camel caravans, a fixture on the Silk Road for two millennia, had still traveled to mountain villages.

“They were used to go places you couldn’t reach in a car,” he recalled. “In the old days, people used them for caravans, but now they’re just kept for the wool, the meat and the milk.”

China to Holland, in 21 Days

When the train reached the Belarus-Poland border, the containers had to be moved again to flat cars with a narrower wheel gauge. While 41 flat cars headed on across Europe right away, 9 more had to wait for a separate locomotive because the train would otherwise exceed European regulations for a freight train's maximum length. The first train reached Duisburg, Germany, on July 3, or 19 days after the containers left Chongqing. Trucks then took the containers overnight to their final destination, H.P.'s European distribution center, in Oostrum, the Netherlands.

All 50 containers, including the nine that left Poland later, ended up arriving in Oostrum in 21 days, or three weeks. Ask ocean shipping executives about the possible challenge from the new Central Asian rail route and they say that it will not take away enough business to affect their bottom lines.

Kazakhstan forecasts that rail freight will grow to 7.5 million 40-foot containers by 2020, from just 2,500 transported from western China to Europe last year. That would be a huge increase that could sorely tax Kazakhstan's rail network; Mr. Alpysbayev said plans were under way to build extra tracks to help handle the traffic. But even at 7.5 million containers, rail freight transiting Kazakhstan would still be only a tenth of ocean freight between Europe and Asia.

Mr. Prophet, the H.P. vice president, said that despite the occasional delays — like the 26 hours at the Kazakh border — the company still planned to shift more shipments from sea freight, and especially from airfreight, to rail. The journey to Europe can take as little as 18 or 19 days by rail, but to allow for delays, H.P. doesn't plan for the train to arrive in fewer than 22 days, he noted.

Zhengzhou's and DHL's move to offer regularly scheduled rail service across Kazakhstan, not to mention the lengthening list of industries trying the route, suggests that despite the occasional customs delay, many companies now share H.P.'s view that the Silk Road has re-emerged as a viable transport route.

"They were all highly interested," Mr. Kleijwegt of H.P. said, "but wanted to see someone else prove it."