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DIRECTORATE OF INTELLIGENCE

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North Korea's Nampo Lock-gate: Going Against the Tide 25X1

Summary

North Korea's construction of the Nampo lock-gate, a large dam and shipping lock complex, typifies the style of P'yongyang's economic management as well as the close link between its economic and political agendas. The project is a model of President Kim Il-song's chuche, or self-reliant development strategy: labor intensive, designed to strengthen the country's infrastructure, and undertaken with little or no outside assistance. Kim Chong-il, the elder Kim's son and heir, is closely identified with the lock-gate scheme, as is the military, which oversees the construction. 25X1

Announced in 1981, and originally scheduled for completion by 1985, the Nampo lock-gate has made a priority claim on manpower and material. But setbacks and delays have beset the project, and construction is only now nearing completion. At least one of three shipping locks is open for river traffic, but it is unlikely that the lock-gate complex will be fully operational until at least 1987. We believe that the history of this

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unusually visible project is indicative of the broader economic problems that have forced modifications in North Korea's domestic political calendar. Indeed, a case can be made that the Nampo project's troubles were a major factor causing P'yongyang to tone down the party's 40th anniversary celebration last October 25X1

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Remaking Nature on a Grand Scale

North Korea prides itself on overcoming hardships and obstacles, as it did after the devastation of the Korean war. In October 1981, the Korean Workers' Party unveiled at its fourth plenary meeting what is perhaps the regime's most ambitious civil engineering project. It set for completion by 1988 "four great nature-remaking tasks": the reclamation of 300,000 hectares of tideland, the development of 200,000 hectares of new farmland, the building of a large hydroelectric power station at Taechon in northwest North Korea, and the construction of a lock-gate on the estuary of the Taedong River in southwest North Korea. The plenum went a step further in stipulating that the lock-gate would be finished by 1985. 25X1

The 8-kilometer-long combination dam and shipping lock complex clearly has been treated as the centerpiece of the "four great" tasks. In addition to giving Nampo the most publicity since 1981, P'yongyang has underscored the project's importance with a number of on-the-spot inspection visits by Kim Il-song and his son and heir, Kim Chong-il. There are practical reasons for the regime to concentrate its efforts on the lock-gate: its fresh water reservoir is essential to expanding cropland; the lock-gate will probably not require imported machinery; and from an engineering standpoint it is the only one of the four tasks that is likely to be completed in this decade. 25X1

The site for the lock-gate is about 11 kilometers southwest (downriver) of Nampo, the largest of several industrial cities on the lower reaches of the Taedong River. Several islands near the south bank at this point on the river offer a convenient shipping channel and anchoring point for the complex. This consideration is important because of the strong currents developed by the 9-meter tides along North Korea's west coast. 25X1

To build the lock-gate, North Korean engineers first had to construct an oval-shaped cofferdam between the islands and the south shoreline. Using special underwater construction equipment built at the nearby Nampo shipyard, workers closed off the construction site from the sea at depths of up to 30 meters. The site was pumped dry by March 1984, according to P'yongyang's published accounts. 25X1

The North Koreans are building three separate locks, of differing sizes, which will accommodate ships of 2,000, 20,000, and 50,000 tons respectively, according to press accounts. The design should increase the efficiency of the lock-gate operations and provide a measure of redundancy. The construction of multiple locks also suggests the regime is planning to significantly increase the limited shipping on the Taedong River. 25X1

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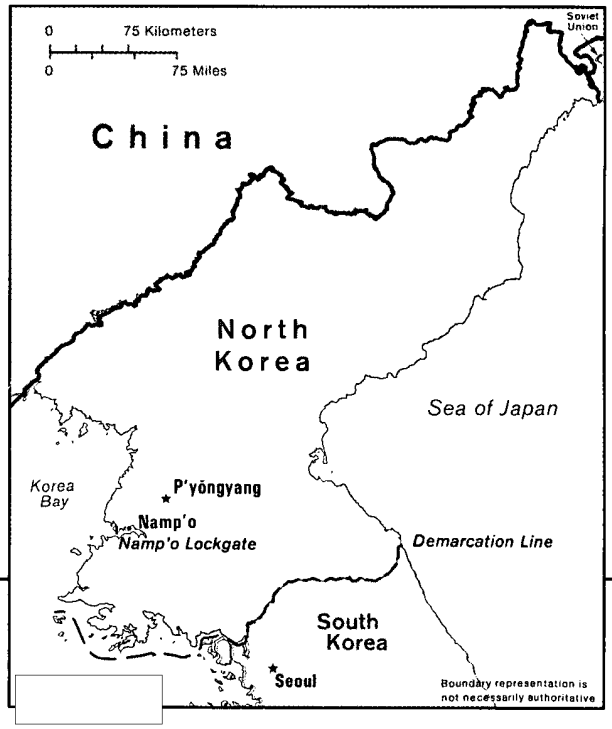
North Korea:
Conceptual Drawing of Namp'o Lock-gate



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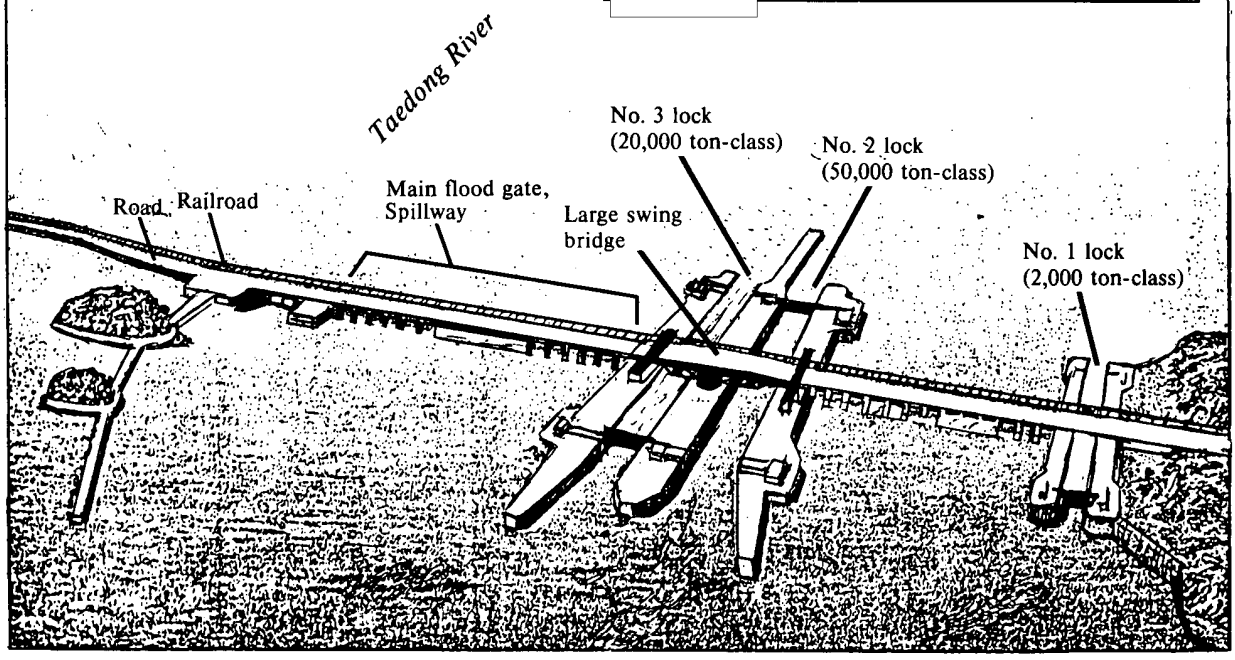
Eight-kilometer-long combination dam and lock-gate



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A highway and railroad will be constructed on top of the dam and lock-gate, and there will be a large swing bridge to permit the passage of ships through the locks. The lock-gate structure also includes a spillway and a medium-size hydroelectric power plant. 25X1

A Multipurpose Structure

The Nampo lock-gate will serve a variety of civilian as well as military purposes. On the lower reaches of the Taedong River, it will create a large artificial reservoir of fresh water, which can be used to irrigate existing cropland and orchards as well as much of the tideland that is scheduled for reclamation to the north and south of the river's mouth. The regime claims the water will irrigate 105,000 hectares of reclaimed tideland and 135,000 hectares of existing cropland, but we believe the figures are exaggerated. 25X1

By raising and stabilizing the level of the Taedong River, the lock-gate will enable larger ships to call at Nampo and other industrial centers upriver. Other smaller lock-gate facilities are in operation or under construction along the upper reaches of the Taedong, which flows through the capital city of P'yongyang. Ultimately, this series of lock-gates will result in an improved waterway navigable from Sunchon (north of P'yongyang) to Chaeryong in the south. (There is no evidence that North Korea is building an east-west canal across the peninsula, as has been reported from time to time.) 25X1

With the Taedong River system more navigable, North Korea plans to expand port facilities at Nampo and Songnim. Songnim has figured prominently in the expansion of North Korean arms shipments to the Third World in recent years, especially to Iran. In addition, North Korea will upgrade some minor ports and build several new ones. Last December, the North announced it is building the "Kilsongpo Port" at Sariwon, capital of North Hwanghae Province. The waterway at Sariwon will be made navigable by the anticipated raising of the water level of the entire Taedong River basin.

The coastal highway and railroad being built in conjunction with the Nampo lock-gate will provide needed links to South Hwanghae Province--an important agricultural region--and cut hours off the transit from there to road and rail hubs in the P'yongyang area. The improved transport network will also help speed military forces and supplies from reserve areas near the capital to forward positions adjacent to the western end of the Demilitarized Zone. The rail line along the dam and lock-gate would be vulnerable to interdiction, however. 25X1 25X1

A Progress Report

Satellite photography of early April shows that the lock-gate complex is nearing completion. The small lock (lock 1) near the shore appears to be operational. Sliding caisson gates are installed at either end of the lock, which measures about 210 by 16 meters.

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At the large double lock (locks 2 and 3), work is continuing on the common wall and on the recesses in the lock wall for the sliding caisson gates. The double locks measure about 277 by 37 meters and 236 by 28 meters. The photography confirms North Korean public statements that the temporary cofferdam is being dismantled and that the locks are now flooded.

A dam spans the length of the estuary from the lockgate structure to the northern shore of the Taedong River except for an opening of some 300 meters. The opening allows river traffic to move past the site while the locks are under construction. A road has been built across the top of the dam to support construction activities. Rail lines end at the construction areas on the north and south banks.

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On 18 April, North Korea announced the closing of the last section of the main dam. This indicates that at least one of the three shipping locks is now open for river traffic. It will take considerable time, however, to adjust the water level on the river, test the lock system, and complete the rail and road connections spanning the dam and shipping locks.

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Management of the Project

The Nampo lock-gate project has provided some insight into the workings of the bureaucracy in North Korea. P'yongyang obviously wants the project to be seen and praised by the outside world--normally highly secretive about such projects, it has been forthcoming on the lock-gate story. On the one hand, this approach may have been shaped by the large scale of the project, which precludes the kind of secrecy maintained during the construction of the arch of triumph and chuche tower in P'yongyang. But the public relations campaign also suggests that the leadership is reasonably confident that the lock-gate will perform as planned.

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In another departure, North Korea made a point of publicizing the heavy involvement of the armed forces in the construction of the lock-gate. As in other Asian Communist nations, the military in North Korea has several civilian construction tasks, capitalizing on its heavy engineering equipment and disciplined labor force. P'yongyang likes to point to this project to underscore the contention that its army is engaged only in peaceful pursuits. O Chin-u, the defense minister and senior military leader on the Korean Workers' Party Political Bureau, is openly acknowledged as the site supervisor. Foreign visitors are told that three divisions, some 30,000 soldiers, are working in three around-the-clock shifts at the site.

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Assignment to the Nampo lock-gate project is portrayed by P'yongyang as a patriotic duty. 25X1

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most soldiers who work there are teenage conscripts using mainly hand tools and outmoded construction techniques. 25X1

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The lock-gate has received unprecedented attention from the two Kims, suggesting its importance in North Korea's overall economic planning. The elder Kim selected the construction site in May 1981 and has escorted several high-level visitors there. Kim Chong-il inspected the site twice on his own, in April 1983 and again in April 1984, and he accompanied his father on the latest publicized visit in September 1985. 25X1

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The lock-gate builders also are vying for resources with other major construction sites in North Korea. The delayed construction startup for Nampo in April 1982, for example, may have been required because needed skilled engineers and equipment operators who were finishing P'yongyang's arch of triumph and chuche tower were unavailable. Both projects were rushed to completion in April 1982, when unveiling ceremonies marked Kim Il-song's 70th birthday. 25X1

Despite the high priority accorded the lock-gate, it is clear the project has continued to suffer setbacks and delays. It seems likely that the original construction timetable was too ambitious given the material shortages and supply bottlenecks that characterize North Korea's economy. The strong tidal currents on the Taedong River undoubtedly have added to the difficulties faced by North Korean construction crews. In addition, the decreasing salinity of the water caused thick ice flows in the river last winter. 25X1

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A Delayed Celebration

Since he began appearing in public in 1980, Kim Chong-il has been portrayed as overseeing virtually all aspects of North Korea's economy, and we believe he wants some concrete achievements to strengthen his position as Kim Il-song's successor. Traditionally, the North has used major party gatherings to publicize its economic successes. The 10th plenary meeting of the KWP Central Committee in December 1984 forecast that the 40th anniversary of the party in October 1985 would be celebrated in grand fashion. 25X1

That anniversary could have been used to claim successes on the nature-remaking campaign announced in 1981 and to set goals for the next long-term economic plan, which had been expected to start this year. As it turned out, the anniversary was subdued. P'yongyang's terse announcement claimed only that the "main structures" of the lock-gate had been completed. 25X1

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Once Nampo is completed, several other major infrastructure projects will be vying for the spotlight. These include the Taechon hydroelectric power plant, billed as North Korea's largest, and the 400-kilometer long northern railway, being built in the mountainous regions near the China border. Like Nampo, the media attention focused on these projects will intensify the pressures on the younger Kim to push them to completion. 25X1

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Nampo Lock-Gate Chronology

22 May 1981	Kim Il-song selects site for lock-gate.
4-6 October 1981	The fourth plenary meeting of the KWP Central Committee calls for completion of the Nampo lock-gate by 1985.
April 1982	Construction begins in earnest.
20 April 1983	Kim Chong-il makes first inspection visit.
March 1984	Cofferdam completed; construction of locks begins.
11, 18 April 1984	Kim Chong-il and Kim Il-song make independent inspection visits.
19 September 1985	Kim Il-song and Kim Chong-il jointly view lock-gate.
8 October 1985	In an announcement timed for the KWP's 40th anniversary, P'yongyang claims that the "main structures" of the lock-gate are complete.
31 December 1985	Cofferdam removed; locks are filled with sea water.
18 April 1986	North Korea announces closing of last section of main dam.

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