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basic imagery interpretation report

# North Korean Naval Shipbuilding July 1980 – August 1982 (S)

STRATEGIC WEAPONS INDUSTRIAL FACILITIES  
BE: Various  
NORTH KOREA

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### **GLOSSARY OF NAVAL TERMS**

FFL	Corvette
LCU	Utility landing craft
LSM	Medium amphibious assault landing ship
PB	Patrol boat
PC	Patrol craft
PCFS	Fire support patrol craft
PCS	Submarine chaser
PT	Torpedo boat
PTG	Missile attack boat
SS	Attack submarine

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INSTALLATION OR ACTIVITY NAME					COUNTRY
North Korean Naval Shipbuilding, July 1980 – August 1982					KN
UTM COORDINATES	GEOGRAPHIC COORDINATES	CATEGORY	BE NO.	COMIREX NO.	NIETB NO.
NA	See below	See below	See below	See below	See below
MAP REFERENCE					
NA					
LATEST IMAGERY USED			NEGATION DATE (If required)		
[ ]			NA		

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Installation Name	Geographic Coordinates	Category	BE No	COMIREX No	NIETB (MRN)
Najin Shipyard 28	42-14-09N 130-17-44E	[ ]			
Sinpo Shipyard South	40-01-22N 128-09-56E				
Yongampo-ri Ship Repair Yard	39-55-57N 124-20-44E				
Nampo Shipyard	38-43-06N 125-23-48E				

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**ABSTRACT**

1. (S/WN) This report provides an imagery-derived analysis of North Korean naval shipbuilding since mid-1980. At least 46 naval vessels, mostly combatants, have been under construction or modification at four shipyards since that time. The information cutoff date for this report is [ ] This report contains 14 annotated photographs, one map, two tables, and a glossary of naval terms.

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**INTRODUCTION**

2. (S/WN) The North Koreans have been engaged since mid-1980 in a major program to improve the offensive capability of their navy. Four major naval shipyards in North Korea have been involved in this program (Figure 1). They are Najin Shipyard 28 and Sinpo Shipyard South on the east coast and Yongampo-ri Ship Repair Yard and Nampo Shipyard on the west coast. Eleven classes of naval vessels were under construction or modification (Table 1) by the end of the reporting period. Activity included construction of two new cruise missile-capable classes, modification of two existing classes to a cruise missile capability, continued production of one missile attack boat class, construction of one probable new-class submarine chaser, series production of submarine chasers and landing craft, resumption of construction of patrol craft and torpedo boats, and the possible resumption of attack submarine construction. The completion of all the cruise missile-capable vessels in this program will nearly double the number of STYX missile launchers available to the North Korean Navy (Table 2).

3. (S/WN) The bulk of this shipbuilding and modification program has been underway at Najin Shipyard 28 (Figure 2) where the majority of the cruise missile-related shipbuilding is conducted. This includes construction of the indigenous Sohung and Soju PTG classes and the Naj-A (NPIC interim designator) cruise missile-equipped large catamaran, and a modification program to retrofit the one east coast Najin FFL with cruise missiles. Also, series production of the Hantaе LCU, resumption of construction of the Sinhung PT, and a modification program to use four unfinished Chongju PCFS hulls for PCs/PCSs have been observed at Najin Shipyard 28. Sinpo Shipyard South, also on the east coast, has been involved in series production of the Sin-A (NPIC interim designator), a probable PCS. Additionally, Romeo SS construction may have resumed at Sinpo Shipyard South following a period of 3 years without a submarine launch. Construction of the Soju PTG and the Sinhung PT has been taking place at Yongampo-ri Ship Repair Yard on the west coast. Also, production of the Hantaе LCU and the Taechong PCS has been moved from Nampo Shipyard, where naval shipbuilding is apparently being phased out, to Yongampo-ri. At Nampo Shipyard, two of the five Chongju PCFS hulls, unfinished for 6 years, were modified to a PC/PCS configuration and launched during 1981. The remaining three hulls were being modified to a PTG configuration, similar to that of the Soju PTG, during 1982.

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### BASIC DESCRIPTION

#### East Coast Shipbuilding

##### Najin Shipyard 28

4. (S/WN) **Naj-A Catamaran.** The Naj-A, a large, catamaran-hulled vessel equipped with four SS-N-2 (STYX) cruise missile launchers, antisubmarine rocket launchers, and a probable helicopter landing pad (Figure 3), was first observed under construction at Najin on imagery of July 1980. The ship is [redacted] long with an overall beam of [redacted]. The individual hulls each have a beam of [redacted] the space between them is [redacted]. A stepped superstructure rises three enclosed levels above the main deck and is almost entirely forward of midships. A probable helicopter landing area, one level above the main deck, extends from the rear of the superstructure to the stern. The main deck is open below this platform, but no elevators are discernible, and the space between decks appears to be of insufficient height for a hangar deck. However, the aft portion of the superstructure on the platform level appears to have an opening and could possibly serve as hangar space. The ship has four STYX cruise missile launchers, two in tandem on either side of the superstructure. Four RBU-1200 antisubmarine rocket launchers

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FIGURE 1. LOCATIONS OF MAJOR NAVAL SHIPYARDS, NORTH KOREA

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**Table 1.**  
**North Korean Naval Vessels Under**  
**Construction or Modification**  
**July 1980 – August 1982**

*This table in its entirety is classified SECRET/WNINTEL*

Class	Operational	Under Construction/ Modification (Incl Fitting-Out)	Major Weapons/ Features	Remarks
Romeo SS	11*	1	—	All on east coast; 12th unit launched at Sinpo in early 1982; components for at least 1 more unit in open storage/staging
Naj-A	—	1	4 SS-N-2s; 2 prob twin 57mm guns; 4 RBU-1200 ASW RLs; catamaran hull; prob helipad	Single unit fitting-out at Najin, mission undetermined
Soju PTG	—	4	4 SS-N-2s	Indigenous Osa I copy; built at Najin and Yongampo-ri; 1st unit fitting-out; 2nd through 4th units remain on buildingway; probably utilizes indigenously produced DRUM TILT radar
Sohung PTG	3	3	2 SS-N-2s	1st 2 units (launched previously at Nampo) are operational on west coast; all subsequent units built at Najin; 1st east coast unit operational; 1 unit fitting-out, 2 remain on buildingway
Chongju PTG	—	3	4 SS-N-2s	Modification to previously unfinished PCFS hulls at Nampo
Najin FFL	1	1	2 SS-N-2s 2 100mm guns, main btry	Addition of cruise missiles applies only to the east coast unit; no related activity observed on the west coast unit
Taechong PCS	6	1	1 85mm main gun (units 1—4); 1 100mm main gun (units 5 & 6); RBU-1200 ASW RL	Units 5 & 6 incorporate a larger main gun + the RBU-1200 ASW rocket launchers are closer to the bow than on units 1—4. Unit 5 prob initially operational on the east coast in late June 1982; unit 7 remains ucon at Yongampo-ri, weapons not yet mounted
Sin-A prob PCS	—	2	Unk	Similar to Taechong PCS; both units ucon at Sinpo
Chongju PC/PCS	2	4	1 85mm main gun; poss ASW RL	Uses previously unfinished PCFS hulls; both west coast units operational; 1st 2 east coast units fitting-out, 2 remain on buildingway at Najin
Sinhung PT	74 (poss 90)	at least 3	—	At least 74 constructed between 1966 and 1971; during current program at least 8 built at Najin and at least 8 built at Yongampo-ri; all completed units have departed both yards; status of completed units not known
Hantaë LCU	4	4	—	3 units operational on east coast; 2 units remain at Najin; 1 unit operational on west coast; 2 units remain at Yongampo-ri

\* Does not include 4 PRC-built units on west coast.

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**Table 2.**  
**Increase in the Numbers of SS-N-2-Capable**  
**Platforms and Launchers as a Result of the**  
**July 1980 – August 1982 Construction Program**

*This table in its entirety is classified SECRET/WNINTEL*

Pre-program			Post-Program		
No & Class	Lnchrs Ea	Total Lnchrs	No & Class	Lnchrs Ea	Total Lnchrs
<b>East Coast</b>			<b>East Coast</b>		
4 Osa I PTGs	4	16	4 Osa I PTGs	4	16
10 Komar PTGs	2	20	10 Komar PTGs	2	20
			3 Soju PTGs	4	12
			4 Sohung PTGs	2	8
			1 Naj-A	4	4
			1 Najin FFL	2	2
Total east coast lnchrs		36	Total east coast lnchrs		62
<b>West Coast</b>			<b>West Coast</b>		
4 Osa I PTGs	4	16	6* Osa I PTGs	4	24
2 Sohung PTGs	2	4	1 Soju PTG	4	4
			2 Sohung PTGs	2	4
			3 Chongju PTGs	4	12
Total west coast lnchrs		20	Total west coast lnchrs		44
Total lnchrs in naval inventory		56	Total lnchrs in naval inventory		106

\*2 Osa I PTGs obtained during program, possibly from PRC.

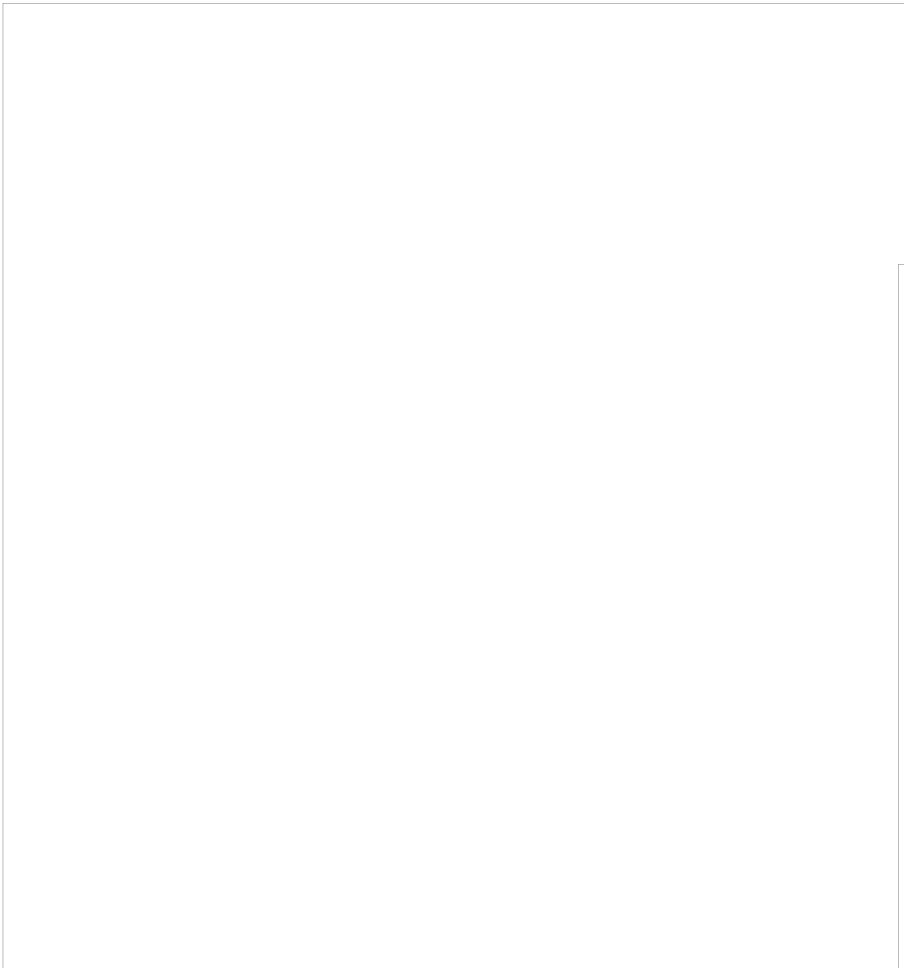
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are mounted near the bow, and at least one gun mount (twin barrel, probable 25-30mm) is on the forward portion of the superstructure atop the 0-2 level (the second level above the main deck). A possible position for an additional weapon is atop the 0-1 level, forward. Two enclosed probable twin 37mm dual-purpose guns have been waist-mounted on the raised platform at the rear of the superstructure. Two additional probable 25mm antiaircraft guns are waist mounted near the rear of the superstructure, above the 0-2 level. The Naj-A was launched between [redacted] and was mediterranean-moored (stern first) at a newly constructed fitting-out quay through at least [redacted]. Both the Naj-A and the Najin FFL were absent from the fitting-out quay at the shipyard on [redacted]. The Najin FFL was at the main quay at Yoho-ri Naval Base [redacted]. The Naj-A was probably conducting sea trials and helicopter landing operations, possibly with the HOUND (MI-4) helicopter that was at Najin Naval Base and Academy [redacted] in the vicinity of Yoho-ri Naval Base, approximately 190 nm to the south of Najin Shipyard.

5. (S/WN) The intended mission of the Naj-A has not been determined. The large size and limited maneuverability of the catamaran hull and the fact that it carries a mix of antisubmarine warfare weapons and cruise missiles suggest that the ship is not intended to be a directly offensive platform and that a PTG role for the ship would probably be limited to antimerchant shipping. A helicopter could be used for targeting the cruise missiles at a longer range than shipborne sensors would allow. The probable helicopter pad is not large and, if utilized for storage of aircraft as well as for flight operations, could accommo-

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date only a limited number of helicopters. This would seem to rule out an assault ship role for the Naj-A. The use of the probable helicopter landing pad for an antisubmarine warfare helicopter would be a significant departure from the norm for the North Koreans, as they have no demonstrated airborne ASW capability.

6. (S/WN) **Soju PTG.** Three Soju PTGs (Figure 4) have been under construction at Najin since mid-1980. This is the first indigenous production of an Osa I PTG-type vessel by North Korea. The Soju PTG is [redacted] long (4 meters longer than the Soviet-built Osa I) with a beam of [redacted]. The deck house, two antiaircraft gun positions, and four STYX cruise missile launchers on the Soju PTG appear to be identical to those on the Osa I PTG. A probable DRUM TILT fire control radar has been mounted on a pedestal aft, in the same position as that on the Osa I PTG. The North Koreans produce their own DRUM TILT fire control radar (probably at Nampo Communications Equipment Plant; [redacted]) and have a land-based version of it deployed with a ZPU-4-type antiaircraft system. The two antiaircraft weapons on the Soju PTG have twin barrels and appear to be similar to the 30mm weapons found on the Osa I PTG. Unit 1 of this class had been launched by August 1981 and was undergoing sea trials south of the shipyard in November 1981. This unit was observed at the shipyard through August 1982. Units 2 and 3 were in the midstages of construction in May 1981, but imagery of June 1982 indicated no further progress. However, by [redacted] the second Soju PTG had been moved inside the construction hall, probably indicating a resumption of construction on the class. Soju PTG construction is also underway at Yongampo-ri on the west coast. In addition to the Soju PTG the North Koreans have eight Osa I PTGs acquired from the Soviet Union, four based on each coast. Two additional Osa I PTGs were newly identified on the west coast on [redacted] (bringing the total on that coast to six). These new Osa I PTGs may have been acquired from the People's Republic of China.

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7. (S/WN) **Sohung PTG.** Construction of the Sohung PTG (Figure 4) on the east coast was first confirmed in July 1980 when four Sohung PTGs were observed under construction at Najin Shipyard 28. Two Sohung PTGs had previously been built on the west coast at Nampo Shipyard; the first became operational in 1975 and the second in 1980. The Sohung PTG is a steel-hulled, North Korean version of the Soviet Komar PTG and carries two STYX cruise missiles. The first Sohung PTG constructed at Najin, unit 3 of the class, was in the water by early July 1980 and had departed the shipyard by February 1982. The second Sohung PTG constructed at Najin was initially launched in September 1980, then was returned to the buildingway and relaunched in August 1981. It was at the shipyard as of August 1982. The third and fourth units at Najin have remained unfinished on the buildingway. The length of time these two ships have remained on the buildingway and the removal of four missile launcher covers from staging alongside the units to the launcher component fabrication/storage area suggest problems with the vessels. The Sohung PTGs constructed at Najin differ from those built at Nampo in that they, like the Komar, mount the 25mm antiaircraft gun rather than the 14.5mm heavy antiaircraft machine gun seen on the two west coast units (Figure 5). The North Koreans also have 10 Komar PTGs, obtained from the Soviet Union, based on the east coast.

8. (S/WN) **Najin FFL.** The one east coast Najin FFL (Figure 6) has been under modification at Najin Shipyard 28 since July 1980. The torpedo tubes have been replaced by two STYX missile launchers and a new deckhouse. Unlike those on the People's Republic of China Navy's Gordyy-class destroyers and Riga-class frigates, these cruise missile launchers do not appear to be trainable. The superstructure forward and aft of the missile launchers has been modified, and the antiaircraft gun suit of the vessel has been upgraded. Imagery of June 1982 revealed that the two 100mm gun mounts (main battery, located fore and aft) had been replaced by larger mounts. The new guns appeared to be at least 100mm. The secondary battery, twin 57mm guns, remained in place. The FFL was observed at sea southwest of the shipyard on [redacted] but had returned to the shipyard by [redacted]. The Najin FFL was at Yoho-ri Naval Base on [redacted] during preparations for the North Korean Navy Day (28 August) activities. The FFL probably accompanied the Naj-A to the Yoho-ri area. The one west coast unit of this class has not undergone any cruise missile modification.

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9. (S/WN) **Hantae LCU.** The Hantae LCU was still in series production at Najin (Figure 4) at the end of the reporting period. The Hantae most closely resembles an LSM, having an enclosed well deck and clamshell doors at the bow, and was originally designated as such. However, the class is not considered to have a blue-water capability because of its size (only 46 meters long with a beam of 7 meters) and has been redesignated an LCU. Unit 1 of the class was constructed at Najin in 1978, while unit 2 was launched from Nampo Shipyard in 1979. By October 1981, two additional Hantaes had been launched from Najin, and two remained under construction. On subsequent imagery a new construction hall precluded observation of the two Hantaes under construction, but a Hantae in the late stages of construction was observed outside the new construction hall in May 1982. This ship did not have the bow section attached and was probably unit 6 of the class; the status of unit 5 is unknown, although its bow had been attached by mid-1981. Two additional Hantaes were under construction during the reporting period at Yongampo-ri, on the west coast, bringing the total for the class to eight units.

10. (S/WN) **Sinhung PT.** A resumption of Sinhung PT construction (Figure 4) was observed in February 1981 at Najin Shipyard 28 after a hiatus of 10 years. The Sinhung is a metal-hulled boat of indigenous design and is the most numerous PT in the North Korean naval inventory. Sinhung PTs are widely dispersed in both fleets, serving primarily as coastal defense assets. At least 74 Sinhungs were constructed at Najin and Nampo Shipyards between 1966 and 1971. Since resumption of construction, at least eight Sinhungs have been built at Najin, and a similar building program was underway at Yongampo-ri Ship Repair Yard, on the west coast, as of the end of the reporting period.

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11. (S/WN) **Chongju PC/PCS.** Modification of the four Chongju PCFS hulls at Najin Shipyard (Figure 4) to a PC/PCS configuration was observed in March 1981. A total of nine Chongju hulls was laid down in 1974 and 1975—four at Najin and five at Nampo Shipyard. The class was originally designed as a PCFS armed with an 85mm gun turret forward and a multiple rocket launcher amidships connected by rails to a reload magazine at the stern. Only one unit of the class, at Nampo, was ever launched in the PCFS configuration and that unit was returned to the buildingway and disassembled in 1976. Construction of the class was intermittent between 1977 and 1979 and was highlighted by the temporary mounting of at least one STYX missile launcher cover, but no launch rails, on a unit at Nampo and the modification of three Chongju hulls at Najin with sponsons, apparently for a similar purpose. The program had apparently been abandoned by 1980; however, renewed activity on the four Chongju hulls at Najin was observed in March 1981, and one Chongju had been launched by August 1981. The forward gun turret on that unit had been retained, but the multiple rocket launcher assembly had been replaced by a pair of waist-mounted 25mm antiaircraft guns, two probable 37mm gun mounts and stern-mounted depth charge rails/racks in a configuration similar to that of the SO-1 PCS. Additionally, a pair of possible antisubmarine rocket launchers was mounted on the bridge wings (Figure 6). A second Chongju PC/PCS was launched between [redacted] and was undergoing fitting-out at the end of the reporting period. The status of the remaining two units at the shipyard was not discernible because of the erection of a new construction hall over the main buildingways. However, prior to the erection of the

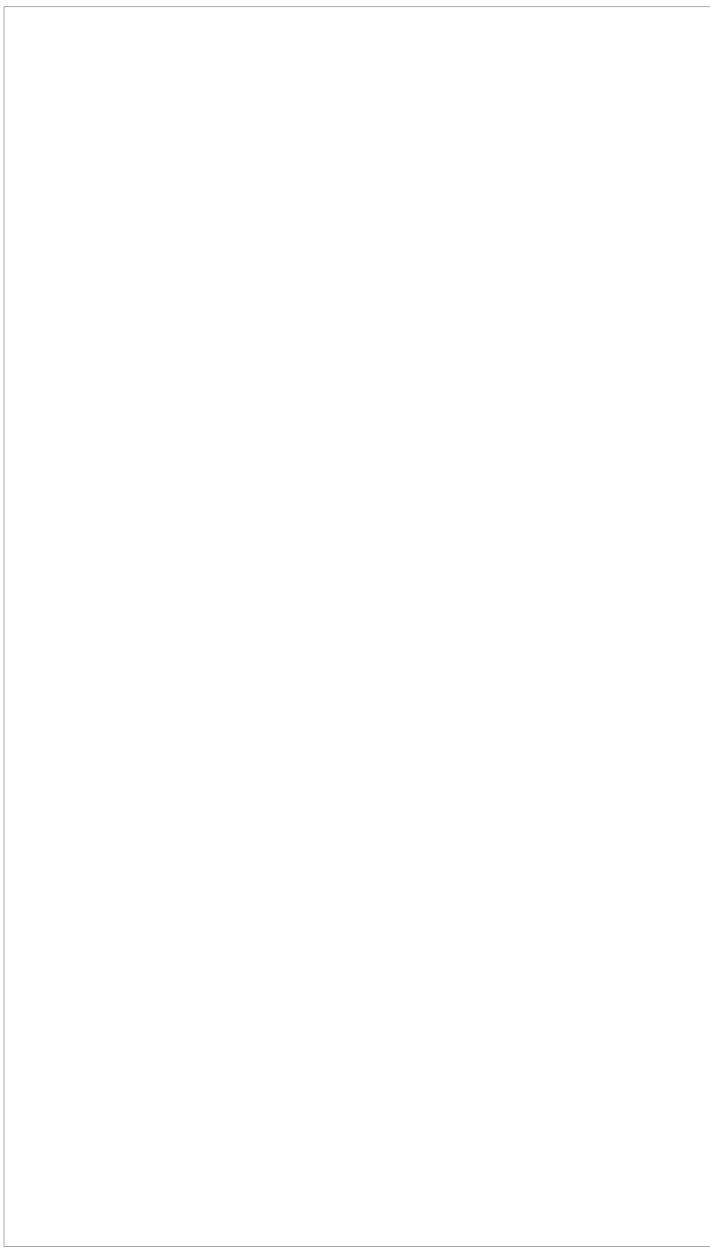
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hall, depth charge rails/racks had been mounted on those units; all four of the east coast Chongju hulls will probably be outfitted as PCs/PCSs.

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12. (S/WN) **Taechong PCS.** The third east coast Taechong PCS, unit 5 of the class, was launched late in 1980 or early in 1981 from Najin Shipyard and is different from the four earlier units, marking apparent design changes to the class. The changes include a larger main gun (a 100mm forward gun instead of an 85mm gun) and the placement of the RBU-1200 antisubmarine rocket launchers closer to the bow (Figure 6). This Taechong PCS underwent a prolonged fitting-out period and was observed at the yard almost continuously through mid-June 1982. However, on [redacted] the PCS was at Najin Naval Base and Academy, along with the other two east coast units, and may have been operational. Unit 6 of the class, built at Nampo Shipyard on the west coast, has the same design changes.

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13. (S/WN) **Status of Shipbuilding Programs at Najin Shipyard 28.** Erection of the new construction hall at Najin Shipyard 28 began in June 1981, and the hall was externally complete by February 1982 (Figure 7). This hall completely covers the four main buildingways at the shipyard and conceals construction activity on all but the large inclined buildingway where the NAJ-A was constructed. This concealment, coupled with a gap in coverage between late October 1981 and early February 1982, has made determination of the status of several ship construction programs difficult. During the construction of the hall, all the vessels on the buildingways were moved to the edge of the quay and all activity on those units was interrupted. The vessels affected were: Soju PTG units 2 and 3, Hantae LCU units 5 and 6, and three unfinished Chongju PC/PCS hulls. The two unfinished Sohung PTGs were outside the area of construction. The hall appeared to be nearly complete on [redacted] although the ships remained outside. When Najin was next imaged, on [redacted] all the vessels except Soju PTG unit 3 had been returned to the buildingways inside the hall. The erection of this hall set back progress on the units involved by at least 6 months.

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14. (S/WN) A very ambitious shipbuilding program was underway from mid-1980 through mid-1981 at Najin Shipyard 28; however, progress since mid-1981 has been very limited. Construction of the Najin-A has been steady and modification of the Najin FFL has continued, albeit at a slow pace. The interruption in construction on at least three classes of vessels may be attributable to the raising of the new construction hall, but other delays in ship construction and extended fitting-out periods indicate the possible reordering of priorities in the construction program.

**Sinpo Shipyard South**

15. (S/WN) **Romeo SS**. Following the launch of the 11th Romeo SS from Sinpo Shipyard South in early 1979, major naval shipbuilding was apparently suspended. The only shipbuilding observed at the yard between May 1979 and May 1981 was the construction of a large cargo ship, fishing vessels, and small craft. Also, several Midget submarines which were probably assembled in buildings at the yard were launched during that period. Approximately 32 Romeo SS components, mostly outer hull sections, were observed on an open buildingway in May 1980. The components were being stored in the open and were not taken into the construction hall where all the Romeo SSs had been built. Additionally, several fabrication jigs for Romeo components were being stored in the shipyard component storage area (Figure 8). The storage (as opposed to staging) of the components and the location of the jigs (in open storage rather than in the fabrication buildings), along with the lack of any new SS launches, indicated an indefinite interruption of the submarine construction program. Between May and August 1981 some of the components were moved from the buildingway to an open area nearby to make room for a ship

under construction. No further activity was observed until February 1982, when approximately half the components and several of the jigs were moved to the large inclined buildingway immediately adjacent to the submarine construction hall. The positioning of the components and jigs suggested staging for a resumption of Romeo SS construction. The 12th Romeo SS constructed in North Korea was observed in the fitting-out basin at the shipyard on [redacted] (Figure 9). Synoptic coverage of Sinpo Shipyard, the two east coast submarine bases—Mayang-do Naval Base [redacted] and Chaho Nedonggiagu Naval Base PUG [redacted]—and Mayangdo-ri Naval Repair Yard and Storage PUG [redacted] on [redacted] accounted for the entire east coast inventory of attack submarines and confirmed this submarine as a newly launched unit. This submarine was probably an unfinished unit from the 1974-1979 construction program. The submarine was probably not constructed from the Romeo-class components that were observed at the shipyard in 1980. The outer hull components and fabrication jigs were still outside the construction hall as of August 1982; the status of the Romeo class submarine construction program is not known. The North Koreans have four additional Romeo SSs, obtained from the People's Republic of China, based on the west coast.

16. (S/WN) **Sin-A Probable PCS**. Unit 1 of the Sin-A class, a probable PCS (inset, Figure 9), has been under construction at Sinpo since May 1981. The vessel, very similar in appearance and size to the Taechong PCS, is [redacted] long with a beam of [redacted]. The 0-2 level of the superstructure extends further aft than that of the Taechong class; this may cause the mast to be placed either on the deck or above the 0-2 level. No weapons or electronics had been mounted on the vessel as of August 1982. Construction of unit 2 of the class began in early 1982.

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**West Coast Shipbuilding**

**Yongampo-ri Ship Repair Yard**

17. (S/W/N) Since 1980 the focus of naval shipbuilding on the west coast has shifted from Nampo Shipyard to Yongampo-ri Ship Repair Yard, located on the Yalu River. The construction of three classes of naval vessels previously constructed at Nampo and the first west coast construction of the Soju PTG have been observed at Yongampo-ri during this reporting period.

18. (S/W/N) **Soju PTG.** A Soju PTG, the fourth unit of the class, was seen in the midstages of construction at Yongampo-ri on [redacted]. At least four STYX cruise missile launcher covers were near the PTG hull. This is the first construction of an Osa I PTG-type vessel from the keel up on the west coast.

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19. (S/WN) **Taechong PCS.** A Taechong PCS (Figure 10) has been under construction at Yongampo-ri since late 1979. This ship is the fourth west coast unit and unit 7 of the class. As of August 1982 the weapons and electronics had not been mounted on the ship. Whether this unit will have the modifications observed on units 5 and 6 of the class (the 100mm main gun and positioning of the antisubmarine rocket launchers closer to the bow) is not known.

20. (S/WN) **Hantae LCU.** Two Hantae LCUs (Figure 10), the second and third units on the west coast and units 7 and 8 of the class, respectively, have been under construction at Yongampo-ri since 1981. Unit 2 of this class was launched from Nampo Shipyard in 1979.

21. (S/WN) **Sinhung PT.** At least eight Sinhung PTs have been constructed at Yongampo-ri during this reporting period (Figures 10 and 11). This resumption of west coast Sinhung PT construction started at the same time as the Sinhung PT program at Najin Shipyard. Between 1966 and 1971 all west coast Sinhung PT units were constructed at Nampo Shipyard.

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**Nampo Shipyard**

22. (S/WN) Nampo Shipyard has historically been the major naval shipbuilding facility on the west coast. However, the last naval shipbuilding start at Nampo Shipyard was a Taechong PCS, begun in late 1978. With the exception of three unfinished Chongju PCFS hulls, at Nampo since 1974, there are no naval vessels at the shipyard. In fact, all shipbuilding activity at the yard except the modification of the Chongju hulls to PTGs has been suspended in favor of heavy fabrication activity. This activity, the construction of large cylinders [redacted], has been underway since late 1981 and occupies most of the buildingways at the shipyard (Figure 12). These cylinders are in support of the Nampo Lockgate, Taedong-gang [redacted] construction project at the mouth of the Taedong-gang (River), 10.8 nm west-southwest of the shipyard. Groups of 18 completed cylinders have been attached at the ends by a framework and arranged upright in three rows of six cylinders each (Figure 13). By [redacted] six of these completed units had been towed to the construction project and sunk, and four units remained at the shipyard. The cylinder units are emplaced to act as caissons for the lockgate.

23. (S/WN) **Taechong PCS.** A Taechong PCS, the third unit on the west coast and unit 6 of the class, was launched from Nampo in mid-1981 and has the same modification as unit 5, which was constructed during the same time at Najin Shipyard 28. The main gun is 100mm, and the RBU-1200 antisubmarine rocket launchers are forward, away from the superstructure. One of the earlier units was on the repairway at Nampo Naval Headquarters and Naval Base and Ship Repair Yard [redacted], adjacent to the shipyard, in May 1982. This unit was being overhauled, and part of the weapons suit had been removed. However, the forward turret remained in place, and no retrofitting to the more recent Taechong configuration could be discerned.

24. (S/WN) **Chongju PC/PCS.** Two of the five Chongju PCFS hulls at Nampo were modified to PCs/PCSs in the same manner (by the addition of depth charge rails/racks and possible bridge-mounted antisubmarine rocket launchers) as unit 1 at Najin Shipyard 28 and launched in mid-1981. The two PCs/PCSs were first observed operationally deployed at Cho-do Naval Base South [redacted] on imagery of [redacted].

25. (S/WN) **Chongju PTG.** The modification of the three remaining Chongju PCFS hulls at Nampo to a PTG configuration was observed during the spring of 1982 (Figure 14). Three STYX cruise missile launch rails and one STYX missile launcher cover were observed mounted on the deck of one Chongju PTG on imagery of [redacted] and by [redacted] all four launchers had been emplaced. The other two Chongju PTGs were in an earlier stage of the same modification. The forward portion of the deckhouse had been erected on all three units, and the mounting rings for antiaircraft guns on the centerline, fore and aft, were in place. The configuration of the weapons systems and the size of the vessels ( [redacted] in length with a beam of [redacted] are similar to those of the indigenous Soju PTG. However, features that make the Chongju PTG different from either the Soju or Soviet-built Osa I PTG are a different bridge area/forward portion of the deckhouse and cruise missile launchers mounted closer to the stern, entirely aft of midships. Twelve STYX missile launcher covers, observed with the three Chongju hulls, will be sufficient to outfit all three units. The completion of the modification of the Chongju hulls to PTGs, the construction of at least one Soju PTG at Yongampo-ri, and the acquisition of two new Osa I PTGs will increase the number of Osa I PTG-type vessels on the west coast from four (prior to 1982) to ten (Table 2).

26. (S/WN) The North Koreans have attempted to conceal this modification program from ground-level observation since late 1981. A wall was constructed around the three Chongju hulls between [redacted] and the 12 STYX launcher covers were moved inside it. This wall isolated the only remaining naval vessels from the remainder of the shipyard. A screen had been erected around the edge of the deck of the one unit with STYX missile launchers by [redacted] effectively shielding the launchers from ground-level observation. These two concealment efforts make the shipyard appear, from ground level, to be engaged only in civilian construction.

**REFERENCES**

**IMAGERY**

(S/WN) All applicable satellite imagery acquired from June 1974 through August 1982 was used in the preparation of this report.

**REQUIREMENT**

COMIREX J99  
Project 542081

(S) Comments and queries regarding this report are welcome. They may be directed to [redacted] USN, Asian Forces Division, Imagery Exploitation Group, NPIC, [redacted]



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