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# Imagery Analysis Monthly Review

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The information and judgments presented in this publication were derived principally from analysis of imagery. Although other sources of intelligence may be included for background, this publication does not reflect an all-source assessment and has not been formally coordinated within CIA.

Comments and queries on the contents of this publication are welcomed. They should be directed to the analyst whose name and green line extension appear after each article.



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China

Experimental Solar Power Plant Identified on Photography

China's only known solar power plant has been identified on December 1977 photography of Shanghai. The plant does not appear to be connected to any electric power consumers and is probably used exclusively for energy research and development. Several other solar energy collectors have been noted in China -- all in the Lhasa, Tibet, area -- but these are solely for water heating.

Construction of the Shanghai plant -- which appeared complete on the December 1977 photography -- began in 1976. In November of that year, an article published in Shanghai presented the design of a solar power plant.\* Photographic analysis suggests that the Shanghai solar power plant complies with this design (see Figure), which uses a two-stage heat collection system. In this process, water which has been preheated by flat-plate solar collectors flows upward to be heated by reflector-condenser collectors. The reflector-condenser collectors rotate to maximize the use of sunlight. The heated water reaches a large tank where it is used to vaporize Freon, which in turn drives a turbine connected to an electric generator.

\*JPRS. L/7250, "Benefits of Thermal Generation of Electricity From Solar Energy Outlined," Translations on People's Republic of China, 8 July 1977 (GOVERNMENT USE ONLY)

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South Korea

Nuclear Power Station Construction

Construction activity at South Korea's two nuclear power stations was evident on photography [redacted] Both of these stations are located on Korea's east coast, one at Wolsong and the other at Kori. At the station at Wolsong, reportedly begun in June 1977 and scheduled to become operational in 1982, the generator hall and reactor building were in the early stages of construction. This station is being built by Atomic Energy of Canada Limited (AECL). Its CANDU reactor will reportedly have a generating capacity of 678,700 kilowatts.

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At the Kori station, excavations for the generator hall and foundations for the Kori 2 reactor building were visible on the May photography. The station's Kori 1 reactor, built by a US firm, was undergoing startup testing. Each of these reactors was designed to have a 564,000-kilowatt generating capacity.

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USSRProgress Of Mobile Offshore Drilling Capability

Recent photography has confirmed Western journal reports that the Soviets are constructing a fleet of modern mobile offshore oil drilling platforms. This fleet of semisubmersible and jack-up platforms is needed for the Soviets' efforts to find undersea petroleum deposits, particularly in deeper areas of the Caspian Sea where oil production from shallow water fields has been declining. Existing Soviet offshore wells have been drilled from fixed platforms, which are too costly and inefficient for deepwater exploratory drilling. Construction of a fixed platform in deep water can take as long as four years. In contrast, a mobile platform can be positioned and ready to drill in a matter of weeks after arriving on location.

Soviet journals have indicated that the first platform -- the Baky -- was completed in 1975. Although it has not been identified on satellite photography, it is presumed to be operating in the Caspian. The second platform was seen on photography of April 1978, on location in the Caspian, 93 kilometers southeast of Baku. The third platform was seen on photography of June 1978, in the mid-stage of fitting out at the port of Kerch on the Sea of Azov. Because of its location, this platform will most likely be the first to be used to explore the deeper waters of the Black Sea. These three are jack-up platforms, which are raised or jacked up above the water on four main support legs. A semi-submersible platform was observed in the early stage of construction at Astrakhan on photography of July 1978. Semisubmersible platforms can operate in even deeper water than jack-up platforms.

Both of the jack-up platforms seen on photography were built in Astrakhan. The one now on location near Baku--called "60 Years of October"--was towed to that port city for fitting out and testing and was observed there on photography of October 1977. The other was observed under construction at Astrakhan in July 1977. It was later transported in sections through the Volga-Don Canal to Kerch, where it was observed being fitted out.

According to Western petroleum journals, the Soviets hope to have 10 jack-up platforms and at least two semisubmersible platforms in service by 1980. Since the first platform was not activated until 1975, however, it is doubtful that they will be able to meet this goal without foreign purchases. The Soviets did purchase a modern mobile offshore platform from the Dutch in the late 1960s.

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USSRBuildup and Improvement of Soviet Nondivisional Artillery

During the last eight years the Soviets have nearly tripled the amount of conventional artillery assigned in direct support of army- and front-level commands. Part of this increase has occurred through the expansion of existing artillery divisions and brigades and part through the formation of new units. The Soviets have upgraded some brigades to divisions, formed new brigades, and created three new types of units that did not exist prior to 1970.

This buildup of nondivisional artillery began largely with the addition of older model guns that had been held in reserve storage. More recently, however, newer model weapons, formerly issued only to tank and motorized-rifle divisions, have been assigned to nondivisional artillery units. Moreover, within the last two years the Soviets have begun deployment of three newly developed weapons--a gun, a mortar, and a truck-mounted multiple rocket launcher--which have been assigned to nondivisional units exclusively. Both the gun and the mortar are self-propelled, large-caliber weapons.

Many of the newer-model towed weapons--D-20 and D-30 howitzers-- that are being added to nondivisional units have probably come from tank and motorized-rifle divisions where these weapons are being replaced by 122-mm and 152-mm self-propelled guns. About 600 BM-21 multiple rocket launchers and 1,850 antitank guns have also been added to nondivisional artillery units since 1969. The Soviets may have produced enough of these weapons to fill the requirements for existing tank and motorized-rifle divisions. This may explain their addition to nondivisional units. At least 260 BRDM-mounted antitank guided missiles (ATGMs) also have been added to nondivisional artillery units since 1969.

The buildup of nondivisional artillery with respect to geographic area has varied. There has been a substantial buildup within the Soviet Union but comparatively little in Eastern Europe. The amount of nondivisional artillery in the four eastern military districts of the Soviet Union has quadrupled and the amount in the three western military districts has tripled. Although we are less certain as to the extent of the buildup in the other Soviet military districts, it too has been substantial. By comparison, the buildup of Soviet nondivisional artillery that has been identified in Eastern Europe has been small, and most of the improvements there have been qualitative.

For additional details on Soviet nondivisional artillery, see IS 78-10099K, [ ] Soviet Nondivisional Artillery: Organization, Buildup, and Deployment, June 1978 (TOP SECRET CODEWORD)

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New OIA Publications

The following reports have been published by the Office of Imagery Analysis since the last issue of the Imagery Analysis Monthly Review.

- 1. IS 78-10118J, [redacted] Industrial Reconstruction in North Vietnam, July 1978 (TOP SECRET RUFF [redacted])
- 2. IS 78-10119K, [redacted] North Korean River-Crossing Units, July 1978 (TOP SECRET RUFF)
- 3. IS 78-10151J, [redacted] Expansion of North Korean Armored Forces, 1970-1977, July 1978 (TOP SECRET MULTIPLE CODEWORD/  
[redacted])
- 4. IS 78-10109J, RCS-16/0001/78, [redacted] Terekty Air-to-Surface Missile Impact Area, USSR, July 1978 (TOP SECRET MULTIPLE CODEWORD)
- 5. IS 78-10144J, [redacted] Yosu Explosives and Munitions Plant, South Korea, July 1978 (TOP SECRET MULTIPLE CODEWORD/  
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