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# Imagery Analysis Monthly Review

March 1980

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# Imagery Analysis Monthly Review

**March 1980**

This publication of the Office of Imagery Analysis contains substantive findings and analytical judgments that were derived principally from analysis of imagery. Although information from 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. (U)

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. (U)



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## Contents

## Backfire Bomber Production and Disposition

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Imagery analysis indicates that the Soviets produced Backfire bombers at the expected rate of 30 per year during 1979 and were continuing to produce them at about the same rate in early 1980.

Based on preliminary analysis of 1979 imagery of all Backfire-associated facilities—including the production plant, operational and training bases, and the flight test centers—we estimate that the Soviets produced 30 Backfire during the year. Our analysis indicates that Long Range Aviation (LRA) received 12 of the newly constructed aircraft and Soviet Naval Aviation (SNA) received 13. The remaining five produced were the new modified-inlet-model Backfire. The modified-inlet Backfire apparently have technical problems (probably propulsion related) that have delayed their delivery. These aircraft were still at the plant on early March 1980 coverages.

In late 1979 and early 1980 the number of Backfire at Kazan Plant 22, the Backfire production facility, rose appreciably—from a previous norm of about nine Backfire to a high of 19 in late February. While this increase in numbers may appear to indicate an increase in production, our analysis indicates it is not related to the rate of production. Rather it is due to both the modified-inlet Backfire produced in 1979 not having been delivered and an increase in the number of previously delivered operational Backfire returning to the plant for repair work during this time period. Our analysis of the plant activity indicates that the production rate of new Backfire remains at about 2.5 per month.

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We estimate that, as of the end of 1979, there were 150 flying Backfire in the Soviet Union. LRA had 61 Backfire, SNA had 59 Backfire, and 30 Backfire were based at the two flight test centers and the production plant. All of our estimates are analytically derived from detailed study of basing procedures and flightline activity and are independent of gross aircraft counts.

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## New Power Generator for an EMP Simulator Identified at Turakovo, USSR

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Analysis of February 1980 imagery revealed that a 5-megavolt surge generator has been installed at the electromagnetic pulse (EMP) simulator at Turakovo Test and Training Complex. This generator will substantially increase the voltage levels used at this complex to test the effects of electromagnetic radiation on military equipment. The complex is part of the Zagorsk Scientific Research Institute for New Types of Weapons, which has, in the past, done research on simulating nuclear weapons effects and nuclear test detection.

The identification and estimated voltage of the generator at Turakovo is based on a comparison of it to a similar generator at the High Voltage Test Laboratory of the Leningrad Scientific Research Institute of Direct Current. The generator at Turakovo is the same size and configuration as the surge generator at Leningrad that, has a 5-megavolt capacity. In addition, both generators have an identical 6- by 6-meter flat-roofed building at their base.

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The surge generator at the High Voltage Test Laboratory in Leningrad is used in testing equipment for high-voltage transmission lines. In a typical test, the generator releases a high-power charge down a short mock-up transmission line. Individual electrical components in the line can then be evaluated for their ability to operate under high-power surges.

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The Turakovo generator is believed to operate in a similar manner, except that it will discharge energy through a grid or antenna specially designed to irradiate military hardware.

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## Soviets Build Large Radio Telescope in Siberia

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Photography confirms an *Izvestiya* report that the large *Badarskiy* radio telescope is being built in Siberia. It will be used to study physical processes in the sun's atmosphere and to forecast solar activity. The telescope, which is under construction about 150 kilometers west-southwest of Irkutsk near the village of Kyren, will be the third astronomical observatory in Siberia. Two astronomical observatories with optical telescopes are located within 150 kilometers of the new facility.

The facility—which is presently under construction—consists of a Mills Cross antenna in a cruciform configuration. The legs of the cross are oriented 000/180 and 090/270 degrees. The east-west leg is 965 meters long, and the north-south leg is 650 meters long. The telescope, when complete, will have about 250 reflector antennas, each with a diameter of 2.5 meters, making it one of the largest radio telescopes in the world.

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Eleven other astronomical observatories have been identified on photography in the Soviet Union. Five of these have radio telescopes. Astronomical observatories have been reported at three other locations, but they have not been confirmed on photography.

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**Locations of Astronomical Observatories, USSR**

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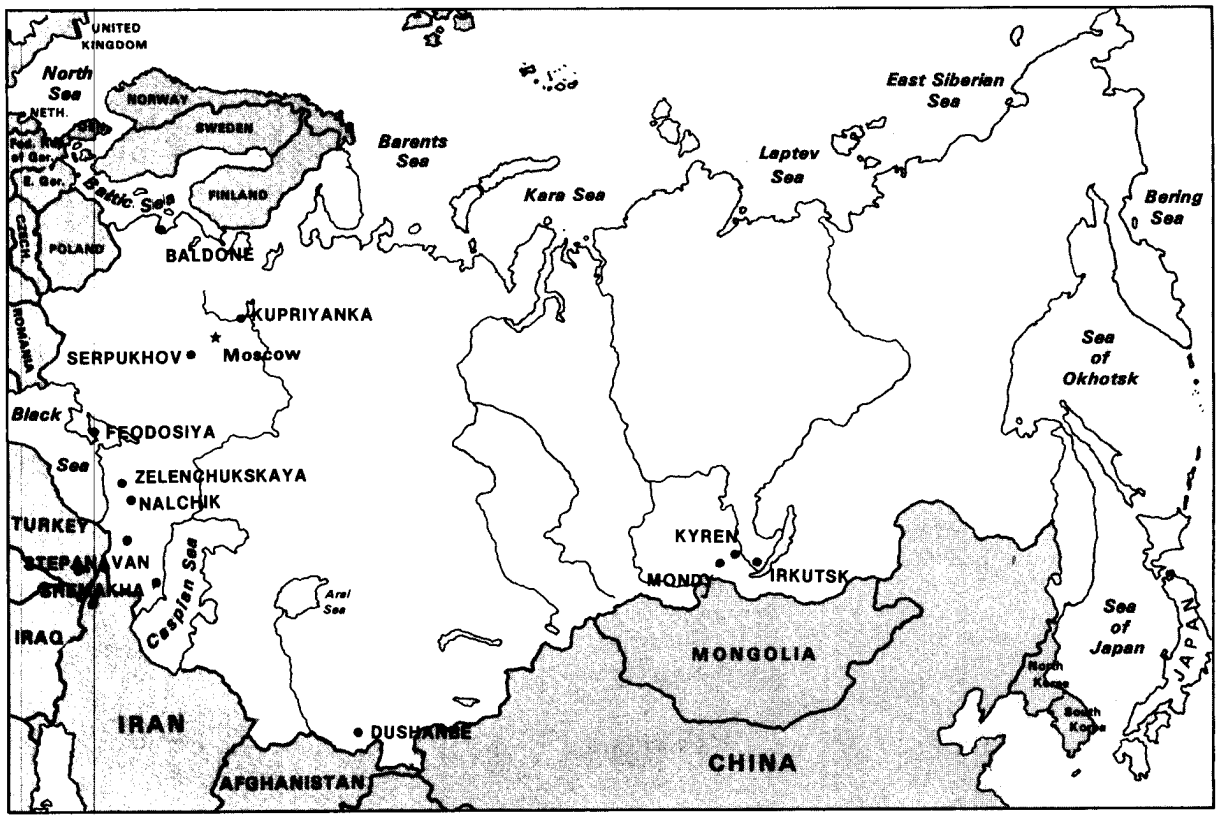






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## Soviets May Establish a Fuel Storage Depot in Vietnam

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Photography of Cam Ranh Bay suggests that the Soviets are going to construct a fuel storage depot in or near this Vietnamese port. Approximately 70 tanks of the type used to store aviation or vehicle fuel were seen at Cam Ranh Port Facilities Vinh Cam Ranh on photography these tanks were still in open storage in the port area.

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Although we cannot determine whether these tanks are for Soviet or Vietnamese use, they are of the type used at other Soviet-built facilities constructed in Third World countries. Similar tanks were used to create an aviation fuel depot at the airfield constructed at Berbera, Somalia. More recently, tanks of the same type were used to create a vehicle fuel depot at the Soviet facilities on Dahalak Island in Ethiopia.

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## Increased Soviet Maritime Activity in Kampuchea

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Analysis of recent photography of Kompong Saom has revealed a marked increase in Soviet maritime activity in Kampuchea. This activity included a rise in the number of Soviet merchant ships using Kompong Saom, Kampuchea's main seaport, and the first sighting of a Soviet warship in a Kampuchean port. This activity reflects Soviet support to the current Vietnamese-backed Kampuchean government. In addition, the Soviets are reported to be interested in obtaining rights to establish permanent naval facilities at Kompong Saom.

In March 1979, a Soviet Andizan-class merchant ship was identified in Kompong Saom. This was the first Soviet merchant ship known to have used this port in almost nine years. No additional Soviet merchantmen were seen in port until early September 1979, when a Soviet Omsk-class was seen at Kompong Saom. Between September and mid-February 1980, small numbers of Soviet ships, usually one or two, were routinely seen in port. However, between mid-February and mid-March, the number of Soviet merchant ships observed ranged from five to seven.

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During this period of increased merchant ship activity, a Soviet warship also visited Kompong Saom a Soviet Petya-II-class light frigate (FFL) was identified in port. This was the first time that a Soviet combatant had been seen in a Kampuchean port. The photography substantiates a Radio Phnom Penh broadcast which announced that Soviet warship "Number 631" had arrived in Kompong Saom in response to an invitation extended by the Kampuchean Revolutionary Army. A Petya-II-class FFL carrying pennant number 631 was known to be operating near Kampuchean waters. Photography showed that the FFL was no longer in port.

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## Pakistanis Return Aircraft to China

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Analysis of photography of the Zhanjiang area and Diaoshuntsun Port Facilities obtained in early March indicates that the Pakistanis are returning aircraft to China by sea. China is one of the major suppliers of arms to Pakistan and these Chinese-built aircraft may require refurbishment or repairs which could not be performed in Pakistan.

the Pakistani merchant ship Ravi was identified off Zhanjiang steaming north toward Diaoshuntsun,a port facility about 10 kilometers to the north of Zhanjiang. The ship was riding high in the water and carrying aircraft shipping containers as deck cargo. The following day, the Ravi was photographed at Diaoshuntsun. The aircraft containers had been offloaded and two F-5 (Fresco) and five F-6 (Farmer) containers were seen on the quay adjacent to the ship.

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The Diaoshuntsun port facility is normally used by the Chinese to load military equipment being exported by sea. The aircraft containers seen here on represent the first time that military equipment seen at this port could be identified as having been returned to China. Tanks and artillery pieces which were seen at the port on the same day may have been loaded aboard the Ravi for shipment to Pakistan.

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## Increased Shipping and Port Capabilities Observed at Shanghai, China

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On recent imagery of Shanghai, the first known use of roll-on/roll-off (RoRo) cargo ships in China was observed. The use of RoRo cargo ships will allow China to shorten the presently lengthy turnaround times at existing port facilities without having to construct expensive specialized cargo handling berths. In addition, the Chinese are constructing a large grain elevator at Shanghai. When completed, the 21-silo grain elevator will have an estimated storage capacity of 30,000 to 35,000 metric tons. It will increase China's total grain elevator storage capacity at major ports by 25 percent, to approximately 150,000 metric tons. These developments are indicative of China's continuing efforts to improve its foreign trade and cargo handling capabilities at major ports.

The first RoRo ship was seen near the mouth of the Huangbu River where it was believed headed for the port of Shanghai. The 187-meter ship was sitting high in the water, indicating that it was either empty or only partially loaded. The ship's origin could not be determined.

In February 1980, a second RoRo ship was observed fully loaded and under way inside the Shanghai port complex. The ship is believed to have been the 136-meter Nankov, which was recently purchased by China from the Japanese. Neither of the RoRo ships has been seen berthed at the port. The ships' cargoes were not determined.

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The new grain elevator will be the second one at Shanghai and China's fourth at a major port. The grain elevator is being constructed 39 kilometers upstream from the mouth of the Huangbu River, adjacent to a warehouse area for grain storage. A conveyor system will connect the elevator to a 150- by 15-meter offshore wharf. It is expected that the facility, when completed, will serve oceangoing vessels.

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## Evidence of Liquid-Hydrogen-Fueled Rocket Engine R&D in China

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A propellant railcar and a propellant vehicle, which are probably for transporting liquid hydrogen, have been identified at the Beijing Guided Missile Development and Production Center, Changxindian. Both the railcar and the vehicle have been observed at a propellant transfer area connected by pipeline to Test Stand 1, where liquid hydrogen/liquid oxygen rocket engine testing for the third stage of China's new space launch vehicle, the Long March 3, takes place. The association of the railcar, vehicle, and test stand with hydrogen was not known until US officials visited Changxindian in 1979. They were told by the Chinese that Test Stand 1 had been devoted to liquid hydrogen/liquid oxygen rocket engine testing since 1970.

The identification of this railcar and propellant vehicle as liquid hydrogen transporters may indicate that other areas at Changxindian have been involved with liquid hydrogen. The railcar was first observed in March 1976 at Test Stand 3, which is capable of testing fully assembled launch vehicles or stages. In February 1978, the railcar appeared at Test Stand 2, the only vertical test stand at Changxindian known to be equipped with a diffuser for altitude simulation. The propellant vehicle was first observed in September 1979 in the propellant production area. After this initial sighting, the propellant vehicle was seen only in the Test Stand 1 propellant transfer area until February 1980, when it was observed on the apron of Test Stand 3.

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The propellant vehicle has a square cab over the engine. A white cylindrical tank on the back of the vehicle is 2 meters in diameter and is rounded toward the front and squared off on the other end. The railcar is 14 meters long and 3 meters wide. It has four evenly spaced vents across the top and a stepped-down section with an access hatch at one end.

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Both the propellant railcar and the propellant vehicle are completely different in size and configuration from liquid-oxygen-associated propellant railcars and vehicles that have been observed near the air liquefaction plant at Test Stand 2, Changxindian.

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**Artist's Concept of Chinese Probable Liquid Hydrogen Vehicle and Railcar**

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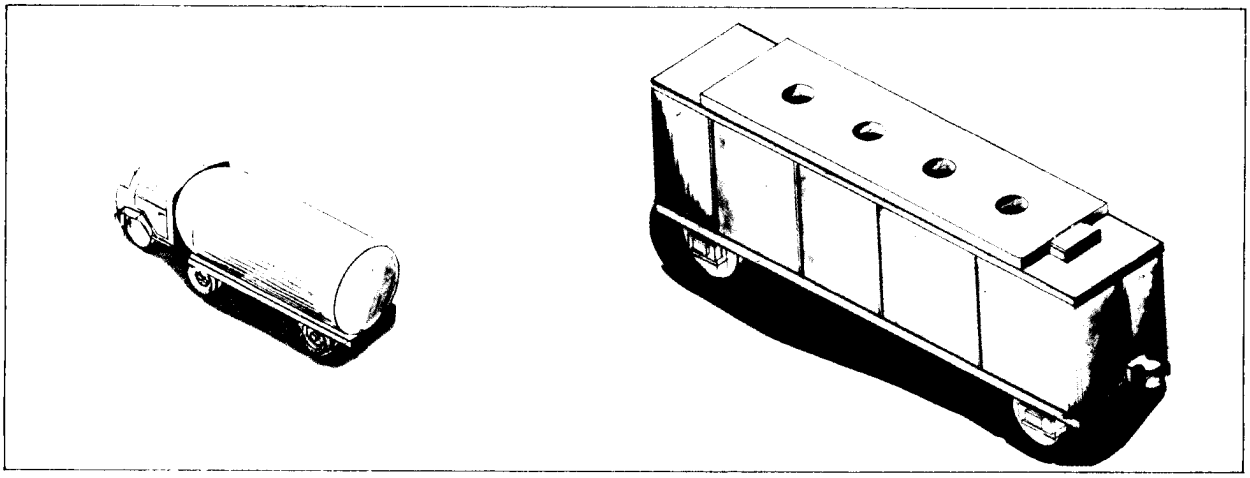

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## North Korean Liquid Propellant Facility

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What appears to be a liquid propellant plant has been identified about 5 kilometers south of Manpo-up, near the North Korean-Chinese border. The facility seems to be designed to produce highly concentrated hydrogen peroxide, which can be used as a propellant or oxidizer in missiles, rockets, and torpedoes. No other liquid propellant plants are known to exist in North Korea

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Construction of the facility began in late 1973 and it appeared operational by 1975. The facility probably produces hydrogen peroxide by the electrolysis of sulfuric acid or potassium persulfate. The major components identified at this facility include an electrolysis building, two lead chamber sulfuric acid plants, a steam plant, an evaporation/waste treatment section, an absorption/distillation section, and a concentration/stabilization section. The presence of eight low-pressure absorbers/distillation towers and an explosives storage area indicates that a 90- to 95-percent-concentrate hydrogen peroxide solution is likely being produced. High-concentrate hydrogen peroxide is explosive and a fire hazard. A 93-percent concentrate is desirable for hydrogen peroxide used as a mono- or bi-propellant, an oxidizer, or an agent in propellant tank pressurization. In commercial applications, at a 3- to 35-percent concentrate, hydrogen peroxide is used as a bleaching agent and as a gas source in rubber forming and plastics manufacture.

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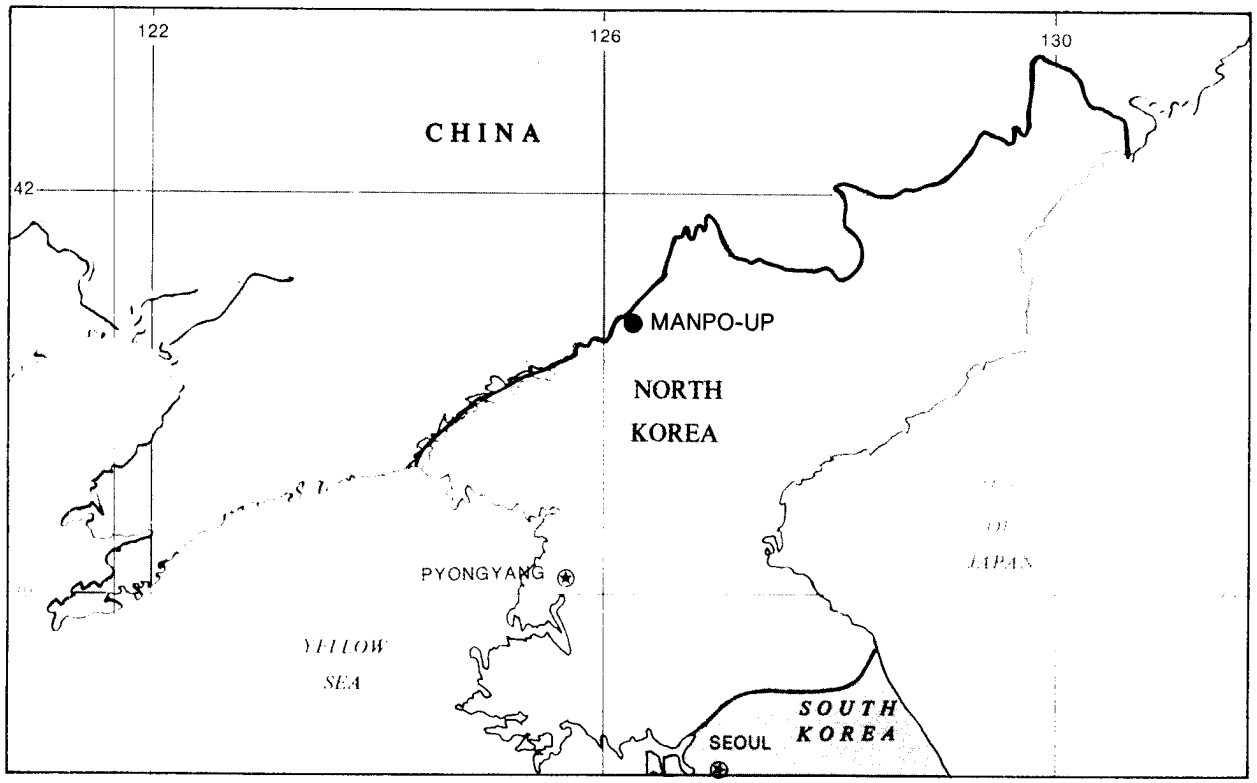
**Locator Map**



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## Thailand Improves Its Defenses Along the Kampuchean Border

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Recent overhead photography indicates the Thais are improving their defensive posture along the Kampuchea border in response to the threat of Vietnamese military incursions. Extensive, though not complete, photography of the border area indicates the Thais have established 14 field artillery sites, with two to six guns per site, within 15 kilometers of the border. Numerous military strongpoints, several mortar sites, and antitank trenches —one up to 7 kilometers long—also were observed. Although we lack a comprehensive base of earlier imagery, many of the military positions appear to have been constructed during the past six months. Military construction was continuing in the area when it was last observed.

The Vietnamese have established field and antiaircraft artillery positions and numerous military camps along the Thai border in order to combat Kampuchean resistance forces and prevent their movement across the border. The bulk of the Thai military positions along the border are situated opposite concentrations of these Vietnamese positions, particularly where the terrain does not provide a natural barrier to cross-border movements. Limited cross-border artillery exchanges have occurred.

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**Thai Defensive Positions Along Kampuchean Border**

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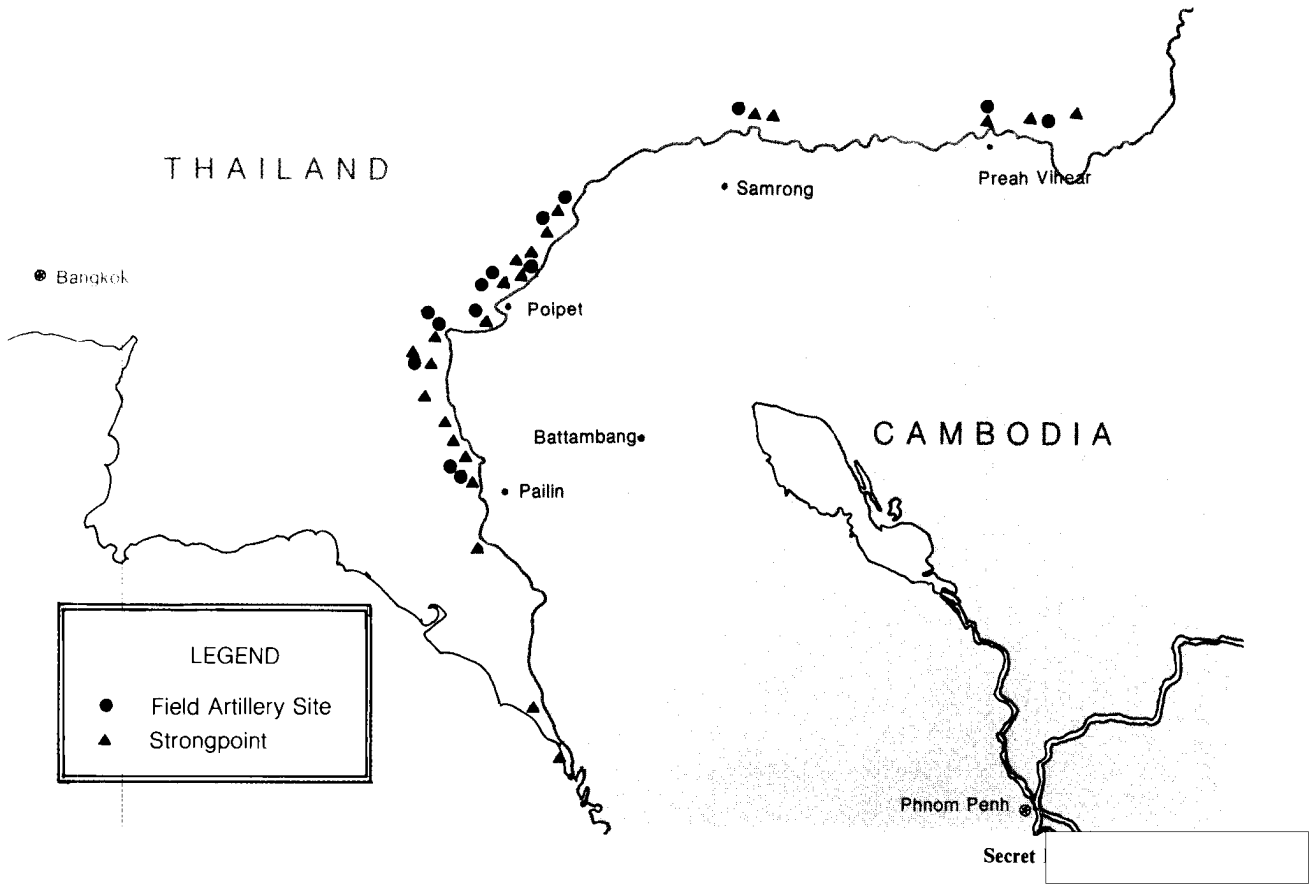


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## New OIA Publications

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

**Imagery Research Papers**

1. IS 79-10176K *Poland's Petroleum Refining Industry,* January 1979 (Top Secret RU 25X1 25X1
2. IS 80-10028K, *Soviet Civil Defense: Rural Relocation of Urban Evacuees,* February 25X1 (Top Secret RUFF 25X1
3. IS 80-10019J *Chinese Communications Satellite Ground Stations,* March 1980 (Top 25X1 cret CODEWORD 25X1

**Imagery Analysis Memorandums**

1. IS 80-10025K *Urban Area Sizes, Land Use Data, Industrial Clusters, and Civil D* 25X1 *Training Sites in 57 Soviet Cities* (Top Secret RUFF)
2. IS 80-10023K *Construction Status of Imported Ammonia Plants in the Soviet Uni* 25X1 (Top Secret RUFF)
3. IS 80-10021, *Oilfield Development Near Dagang (Ta-Kang), China* (Secret 25X1
4. IS 80-10017K, *Activity Within the Soviet Railroad Network* (Top Secret RUFF) 25X1
5. IS 80-10040K, *Damage to the IGAT Gas Pipeline Near Saveh, Iran* (Top Secret RUFF 25X1
6. IS 80-10044K, *Start-up of Esfahan Petroleum Refinery, Iran* (Top Secret RUFF) 25X1
7. IS 80-10046K, *Leningrad Metals Plant 22nd Party Congress (LMZ)* (Top Secret RUFF)
8. IS 80-10043, *Development of Shengli Oilfield, China* (Secret 25X1

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10. IS 80-10047K *Recent Military Developments in South Yemen* (Top Secret RUFF 25X1
11. IS 80-10012K, *Military Communications Facilities in Aden, Peoples Democratic R* 25X1 *lic of Yemen* (Top Secret RUFF 25X1
12. IS 80-10045K, *Zimbabwe African National Liberation Army (ZANLA) Guerrilla* 25X1 *in Mozambique* (Top Secret Ruff 25X1

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13. IS 80-10034J, *Angolan Air Force Aircraft Inventory* (Top Secre 25X1
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14. IS 80-10037K, *Status of Surface-to-Air Missile Sites in Ethiopia* (Top Secret RUFF) 25X1

15. IS 80-10033J, *Recent Trends and Improvements in Soviet Signals Equipment* (Top Secret 25X1
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16. IS 80-10008K, *pecially Designed Support Buildings for the SS-18 ICBM System* (Top Secret RUFF 25X1
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17. IS 80-10013JX *Evidence of Fire at Pechora Ballistic Missile Early Warning Radar* (Top Secret CODEWORD) 25X1

18. IS 80-10015K, *Differences Between the Original and the Modified Type IIIX Launch Control Facilities at Soviet ICBM Complexes* (Top Secret RUFF 25X1
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19. IS 80-10018K, *Analysis of the SS-18 ICBM Umbilical Frame* (Top Secret RUFF 25X1
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20. IS 80-10024J *Production of Space- and Missile-Related Components at Omsk Airframe Plant 166, USSR* (Top Secret 25X1
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21. IS 80-10026K *Possible Calibration Device Identified for 64-Element Telemetry Array* (Top Secre 25X1
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22. IS 80-10031K, *Analysis of Scientific Research Institute 88, Moskva Missile and Space Development Center, Kaliningrad 88* (Top Secret RUFF 25X1
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23. IS 80-10036K *Soviet SS-5 IRBM Force Status* (Top Secret 25X1
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24. IS 80-10039K *Analysis of the L'vov Radio Plant L'vov, USSR* (Top Secret RUFF 25X1
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