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## Can CIA Cratology Ultimately Outsmart Kremlin's Shellology?

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### Study of Crates on Soviet Ships Is a Big Help in Espionage If Shell Game Isn't Played

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WASHINGTON — Would James Bond study pictures of crates to figure out what the Russians are up to?

Not likely. Crates don't do much for the image.

But the Central Intelligence Agency has elevated crate espionage to a science. It is called cratology, the tongue-in-cheek name intelligence analysts have given to the study of crates and other containers used by the Soviets or their allies to ship military hardware around the world.

Currently, cratologists are keeping a close watch on some crates that arrived at the Bulgaria Black Sea port of Burgas last July. The analysts believe the crates, shipped from Libya, contain five L-39 Czechoslovakian aircraft that may be bound for Nicaragua. Keeping track of these crates on photographs is easy because the Libyans built the crates from two different shades of wood. "They're a piece of cake to pick up," one U.S. official brags.

#### Original Development

Cratologists have been monitoring such shipments ever since Moscow started delivering arms to Third World nations almost three decades ago. Experts study pictures, usually taken by surveillance satellites at different angles, to determine the dimensions and shapes of crates. They then compare the crates with similar packages they have seen earlier whose contents have been identified.

Sometimes, cratologists build scale models of the packages and their suspected contents to see whether the cargo would fit in the container. Such models were used during the 1962 Cuban missile crisis to help convince President Kennedy that the cratologists' assessments were accurate.

Cratology has played a largely secret role in several other U.S.-Soviet diplomatic flaps. During a routine examination of surveillance photographs in 1978, analysts noticed something unusual about crates being loaded aboard ship at a Soviet Black Sea port. Cratologists knew that most Soviet aircraft are broken down into three sec-

tions for crating and shipping: a crate for the wings, one for the fuselage and a third for the tail assembly. Some of the crates showed the characteristics of MiG-21 packages, yet the crates were larger.

#### New Model of MiG

Intelligence analysts tracked the ship as it traveled south to the Mediterranean Sea and across the Atlantic to the Cuban port of Cienfuegos. When the crates were unpacked, intelligence sources on the ground confirmed the cratologists' suspicions: The Cubans had received MiG-23 aircraft, a more advanced fighter than the MiG-21 that hadn't yet been introduced into the Western Hemisphere until then. The arrival of new weapons in Cuba "caused a fair amount of flutter in the Carter administration," a former intelligence official says.

If cratology has a father, it probably is Arthur Lundahl, who retired in 1973 as director of National Photographic Interpretation Center. Mr. Lundahl, who did photo interpretation for the Navy in World War II, was recruited by the Central Intelligence Agency in 1953 to organize the agency's photographic-intelligence activities. He set up shop above a Ford auto dealership in Washington. "It was a flea-bag place," he recalls.

Photographic technology has advanced so far that cameras on today's satellites and spy planes can photograph details as small as the numbers on a license plate. Photo reading, at the same time, has evolved into "photo-grammetry," or the science of discerning exact dimensions from photographs. And analysts who spend part of their time studying photographs of crates and other containers have been dubbed cratologists.

In the mid-1950s, the Soviets began shipping arms to Egypt, Syria, Ghana and other Third World clients. Most of the shipments consisted of the same items: MiG aircraft, T-34 tanks and artillery pieces. Because these items were bulky, they were transported above deck, packed in crates, making them easy targets for the CIA's photographic eyes. Analysts began cataloging these items and soon were able to identify them from the crates.

In 1962, analysts studying satellite photos of crates being shipped to Cuba by the Soviets gave the Kennedy administration its initial warning that a major arms buildup was under way. Dino Brugioni, a CIA photo analyst at the time, says cratologists identified shipments to Cuba of Komar guided-missile patrol boats, MiG-21s and IL-28 "Beagle" bombers. Alerted by these early signs, U.S. intelligence analysts discovered in mid-October that Moscow was delivering missiles to Cuba, touching off the Cuban missile crisis.

Ray Cline, then deputy director of the CIA, recalls that at a staff meeting during

which the early findings were discussed somebody said, "Hey, we've invented a new science here—cratology!"

Mr. Cline says that his analysts also discovered that the tents used by Soviet personnel in Cuba were different from the Cubans' tents, which had a one-foot-wide gauze ventilation band around the top. U.S. analysts using surveillance photographs, therefore, could track the movements of the Russian technicians in the field who were assembling the missiles. "We began calling it tentology," Mr. Cline quips.

Officials don't like to discuss cratology for fear of revealing too much information about their surveillance, photo-analysis and computerized information-processing capabilities. To the dismay of the intelligence community, that secrecy was pierced in early November when certain government officials leaked reports that crates containing MiG-21s might be on their way to Nicaragua.

The crates had first been photographed by satellite in late September at the Soviet port of Nikoloyev, but then a heavy cloud cover obscured the satellite's view for three days, according to intelligence officials. When the next pictures were taken, the crates were gone and a ship large enough to accommodate them below deck, the Bakuriani, also had left port. When the ship headed for the Nicaraguan port of Corinto in early November, stories about its suspected cargo were leaked. However, the crates weren't unloaded in Corinto.

What happened to the crates that set off the recent crate crisis? Some analysts speculate that the Soviets, pressured by the publicity, decided the delivery would be too provocative. Other analysts say the crates were never loaded on the ship. Rather, they say, the photograph showed crates of MiGs being returned to the Soviets for repairs, a common practice for Third World nations.

A third theory suggests that the Soviets may, at times, turn the science of cratology to their advantage. Richard Helms, a former CIA director, speculates that perhaps the Soviets have converted cratology into a giant shell game, in which they move empty crates about in an effort to test U.S. reactions. Even as you read this, the shellologists may be busily at work in the Kremlin.

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