



Washington, D.C. 20505

The Honorable John C. Whitehead
Deputy Secretary of State
Washington, DC 20520

Dear John:

Enclosed is a paper addressing the question posed in your letter of September 17, 1987. This paper has been cleared for your use with the [REDACTED] and has been coordinated within the Intelligence Community and the Department of Defense. [REDACTED]

If you have any further questions, please refer them to [REDACTED], Chief of the [REDACTED] Center. He is the CIA central point of reference for this issue. [REDACTED]

Sincerely,

Robert M. Gates
Deputy Director of Central Intelligence

Enclosure

[REDACTED]

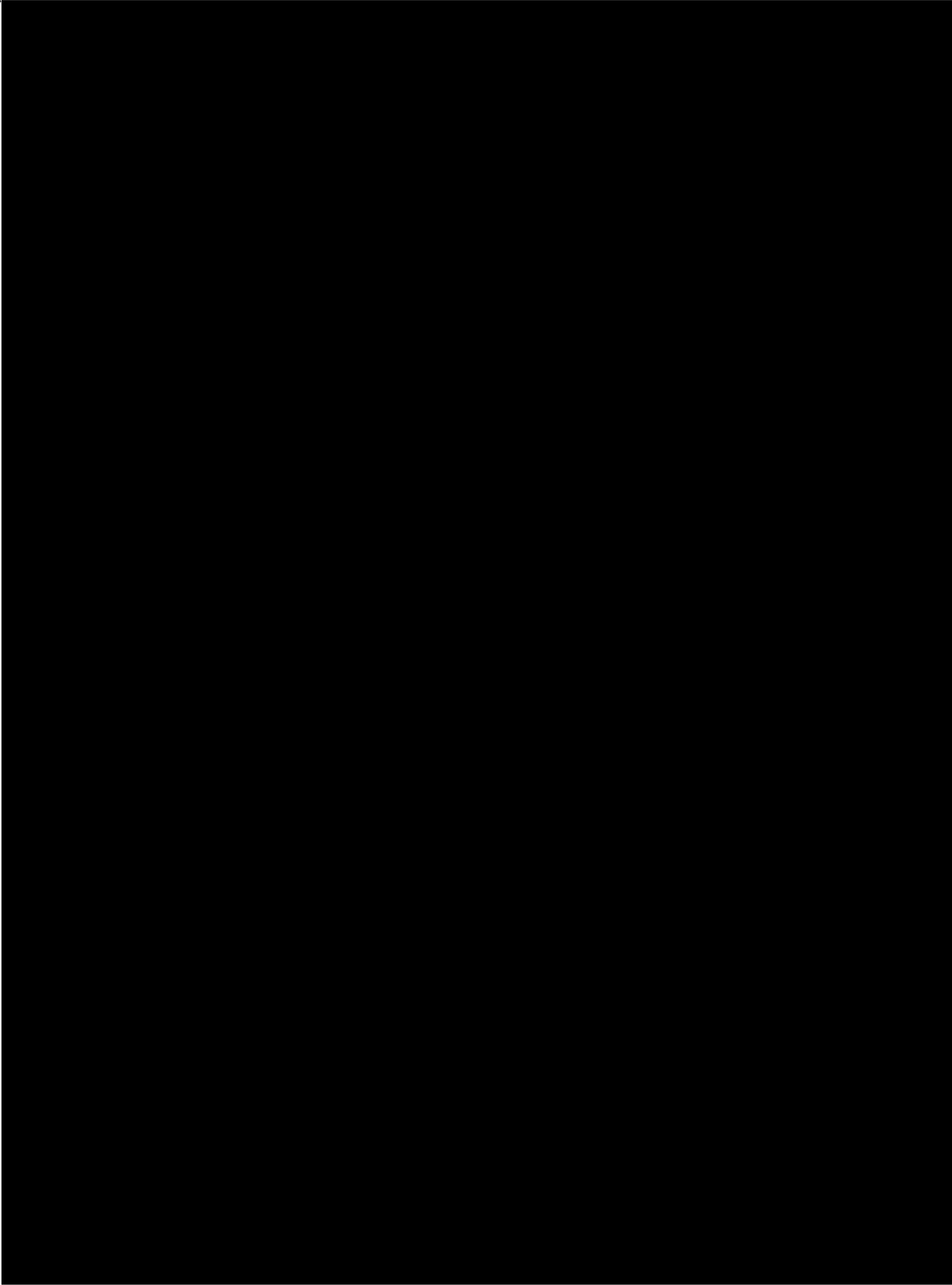
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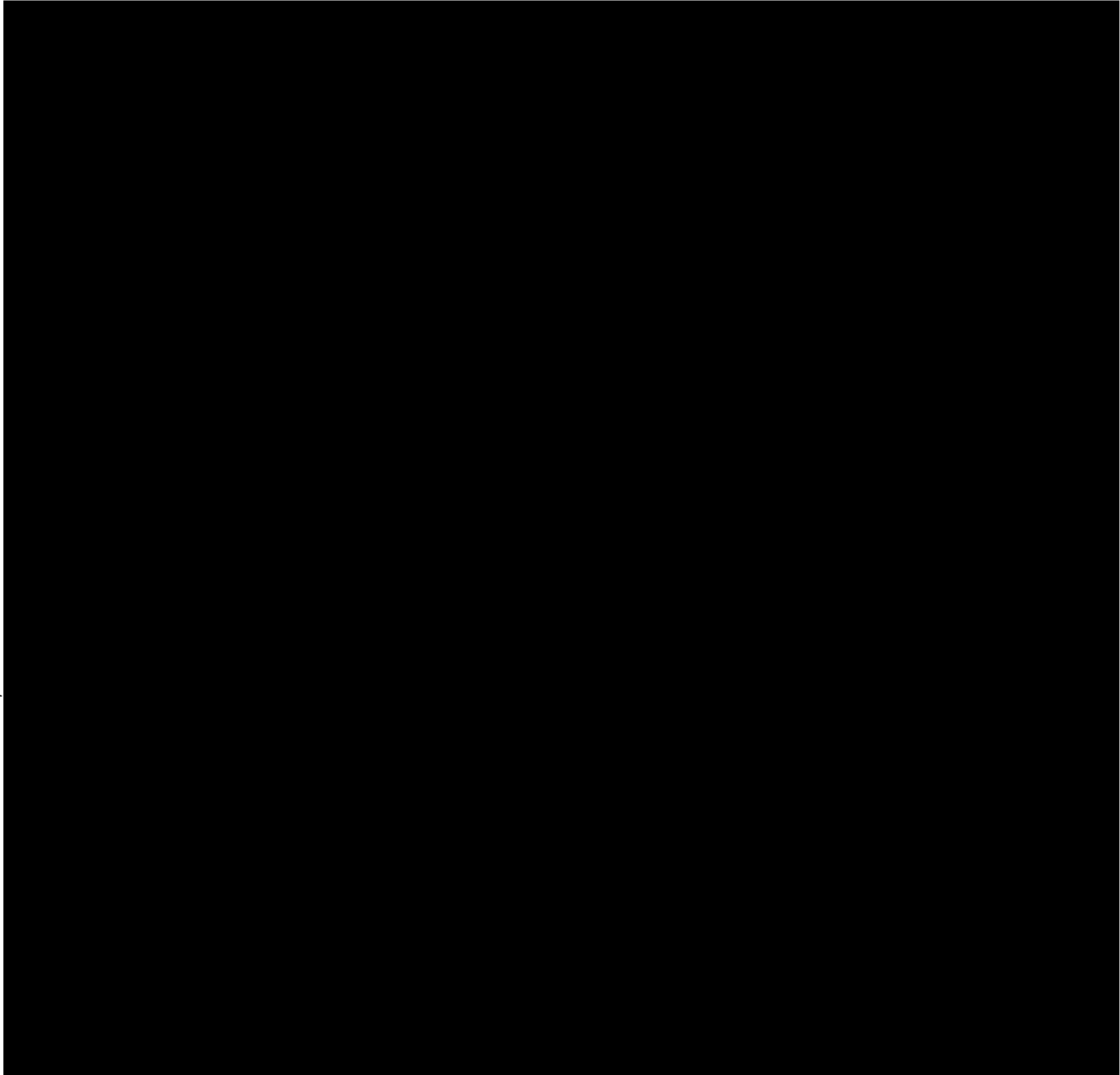
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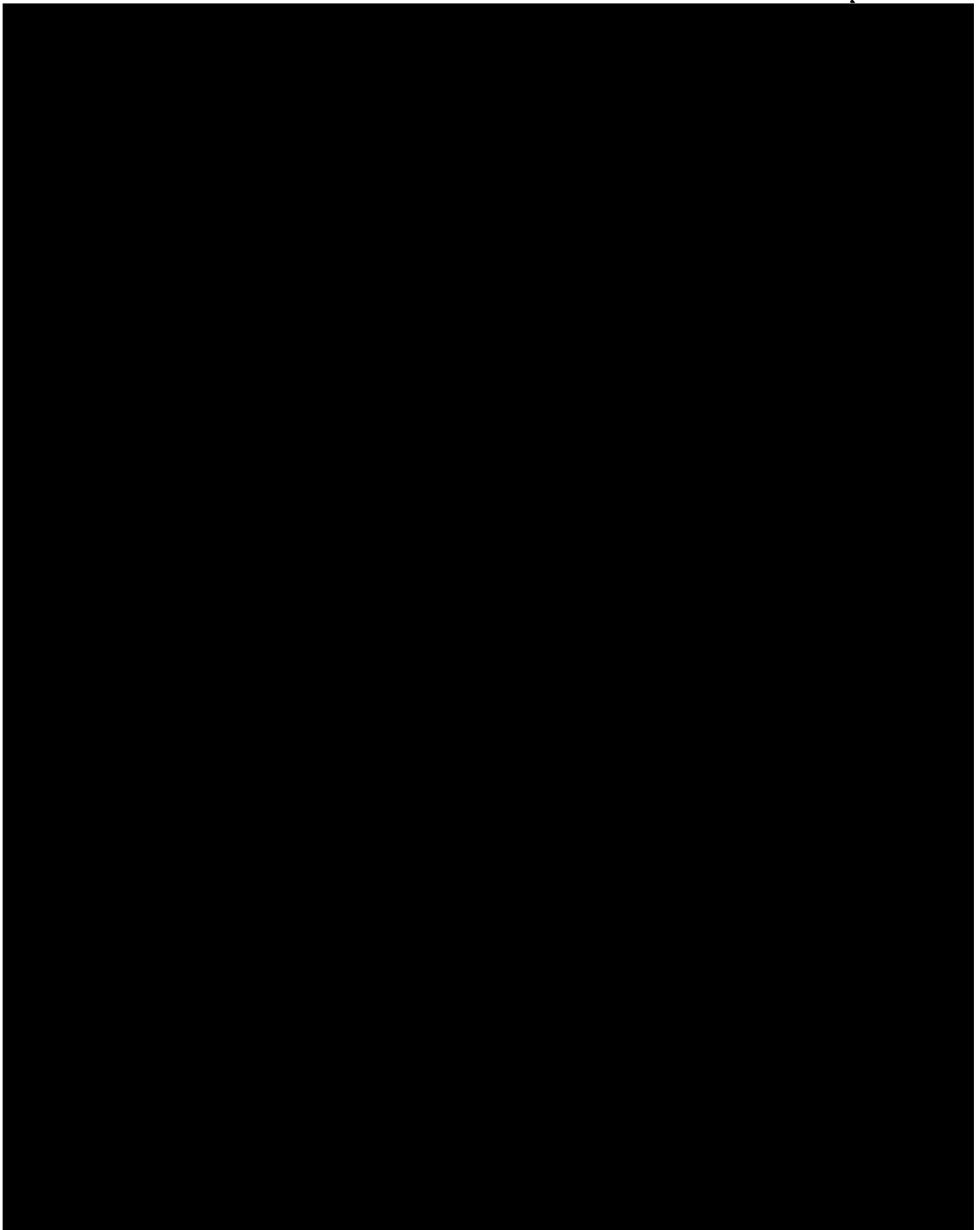
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PUBLIC STATEMENT

CHRONOLOGY OF EVENTS IN THE TOSHIBA/KONGSBERG PROPELLER MILLING TECHNOLOGY DIVERSION CASE

In 1980, the Soviet foreign trade organization, Tekmashimpōrt, contacted the Japanese trading firm, Wako Koeki. Tekmashimport wanted to purchase Western automated propeller manufacturing equipment for one of its clients.

- Wako Koeki surveyed Japanese machine tool manufacturers to determine which produced such specialty equipment and would supply it to the Soviets.
- Toshiba Machine, a majority owned subsidiary of the Toshiba Electric Corporation, agreed to provide the equipment and negotiations began.
- The Japanese firms enlisted the Norwegian firm Kongsberg Trade, a division of Kongsberg Vaapenfabrikk. Kongsberg Trade agreed to provide the computer numerical controllers, the brains that run the machines, and the propeller design and production software.

On April 24, 1981 two contracts were signed in Moscow. The first between Tekmashimport and C. Itoh, the second between Tekmashimport and Kongsberg Trade.

- C. Itoh, acting as the agent for Toshiba Machine, agreed to supply four, state-of-the-art, propeller milling machines -- Toshiba Machine's model MBP-110 -- and to provide service and spare parts for five years from the date of installation.
- The MBP-110 is capable of precision milling propellers up to 11 meters in diameter and is a COCOM restricted commodity.
- Kongsberg Trade agreed to supply the CAD/CAM system including the computer, spare parts for the NC-2000 computer numerical controllers, and service for five years from the date of installation.

In a third contract between Kongsberg Trade and Toshiba Machine, Kongsberg agreed to supply the numerical controllers to Toshiba Machine for installation in the MBP-110's before shipment by C. Itoh to the Soviet Union.

The four sophisticated marine propeller milling machines and propeller CAD/CAM software were diverted to a Soviet Navy propeller production facility in Leningrad--the Baltic Shipyard.

- The equipment was delivered and installed in the shipyard starting in 1983 and completed in early 1984. The companies serviced and updated the machines and software as late as June 1984.
- The software was modified in 1984 to enhance the capabilities of the machines and reduce the time it takes to mill a propeller.

II. Export Violations.

The sale of this equipment was a violation of COCOM restrictions on the sale of machine tools and computer numerical controllers to proscribed destinations.

- The machines exceeded the COCOM limits on the number of simultaneous axes-- 9 vs 3; the number of working spindles-- 2 vs 1; the maximum allowable machine size; and the spindle cutting power.
- The computer numerical controllers exceeded the limits on number of simultaneous axes-- 9 vs 2.
- The software was modified by Kongsberg to generate output matching the specifications of the Toshiba machines. This software was specifically developed for automated marine propeller manufacturing. However, software was not explicitly controlled under the COCOM list in force at the time of the sale.

III. Impact

This sale has allowed the Soviet Union to acquire the ability to produce quieter propellers for its submarine fleet reliably, repeatedly, and in large numbers.

- These machines and the software have provided the three essential ingredients for the manufacture of quieted propellers:
 - 1) accuracy -- 0.01mm.
 - 2) flexibility -- 5 axis machining simultaneously on two different blades.
 - 3) high degree of automation.
- These characteristics allow the machines to produce propellers with numerous, skewed, identical blades that are precisely contoured to reduce low frequency blade rate noise and high frequency cavitation noise. In addition, the accuracy of the machines and the manufacturing software enable the Soviets to produce these complex propellers with low rejection rates.
- These machines allowed the Soviet Union to more than triple their yearly production rate of sophisticated propellers.