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AN ASSESSMENT OF THE CHICOM ABILITY TO PRODUCE AND DELIVER NUCLEAR WEAPONS

Prepared

by

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Fissionable Materiels Production

The source of the U-235 used in the first CHICOM test has not as yet been definitely established. We cannot exclude the possibility that it came from the USSR although we have no such evidence. On balance, however, we tend to believe that it came from the only isotope separation facility thus far identified in China, the gaseous diffusion plant at Lanchou. The number of stages installed in the single cascade building at Lanchou is probably inadequate for the production of fully enriched uranium in an ordinary mode of operation; however, the CHICOMs could have employed a batch process which could produce about 20-100 kg of weapon grade U-235 per year. While there is no evidence of the existence of other isotopic separation facilities such as electromagnetic, gas centrifuge, or diffusion cascade buildings, their operation in a topping mode used in conjunction with Lanchou is considered possible and could result in an annual production of as much as a few hundred kg of U-235 per year.

The fact that the first CHICOM test was of an all U-235 design probably indicates that sufficient plutonium for a test was not then available but we believe that a device utilizing plutonium could be available at any time. There is at Pau-t'ou a suspected plutonium reactor of perhaps 30-40 mw which could produce 10-12 kg of plutonium annually. Since this is a rather small amount of plutonium for the broad nuclear weapons program that we believe the CHICOMs are pursuing, we think other production reactors exist or are planned.

Types of Weapons

Analysis of the Chinese Communists' nuclear test of 16 October 1964 indicates a rather crude device comparable to the earlier tests of the United States. [redacted] Continued testing with U-235 would permit a decrease in weight and diameter. [redacted] A weaponized version of the first test device could be produced very soon without further test. [redacted] This device would be heavy and expensive but would not require extensive testing for development and stockpile.

There is no information available concerning the capability of the Chinese Communists to design and produce thermonuclear weapons but we do not believe they could achieve such a capability until after 1970.

Availability of Nuclear Weapons

The table below shows ranges of values which are derived from two different estimates of production capacities. While the ranges are intended to represent reasonable maximums and minimums, it cannot be ruled out that the actual availability lies outside the ranges shown. Compatible delivery vehicles are shown as a function of time.

[redacted]

Estimated nuclear weapons availability:

End	U-235	PU	Total Weapons	Compatible Delivery Vehicle
1964	[redacted]			Bull, modified Badger
1965				
1966				Beagle
1967				MRBM (possibly)

Delivery Systems

The earliest weapons capability that could be achieved by the Chinese utilizing the present U-235 test device would have to be based upon air delivery.

We estimate that a ballistic missile system (MRBM class) with a maximum warhead weight of about 2000 pounds, will probably not achieve IOC before 1967-68.

Aircraft delivery before 1970 would be limited to the following aircraft with the restrictions noted for internal carriage:

	Order-of-Battle (1964)	Maximum Bomb Diameter	Maximum Bomb Weight
Bull	13	5 feet	20,000 lbs.
Badger	2	4.4	20,000
Beagle	290	3.2	6,600

External or partially external carriage would be possible for larger diameter bombs with a corresponding reduction in mission performance.

The Fishbed (22 in 1964 order-of-battle) conceivably could carry a 30" bomb of about 2000 pounds, to short ranges.

Conclusions

The evidence obtained to date does not permit an unambiguous interpretation of the scope and trends of the CHICOM nuclear weapons program. We believe, however, that the Chinese, in collaboration with the Soviets, embarked upon an extensive effort in the late 1950's involving both Pu-239 and U-235. Undoubtedly, the Soviet pullout in about 1960 seriously delayed the construction of fissionable materials production facilities but, despite this, we believe the Chinese have every intention, and are in the process, of developing an extensive, broad-based nuclear weapons program.