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NATIONAL INTELLIGENCE ESTIMATE

Communist China's Weapons Program for Strategic Attack

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The Assistant to the Director, Federal Bureau of Investigation, the subject being outside of his jurisdiction.

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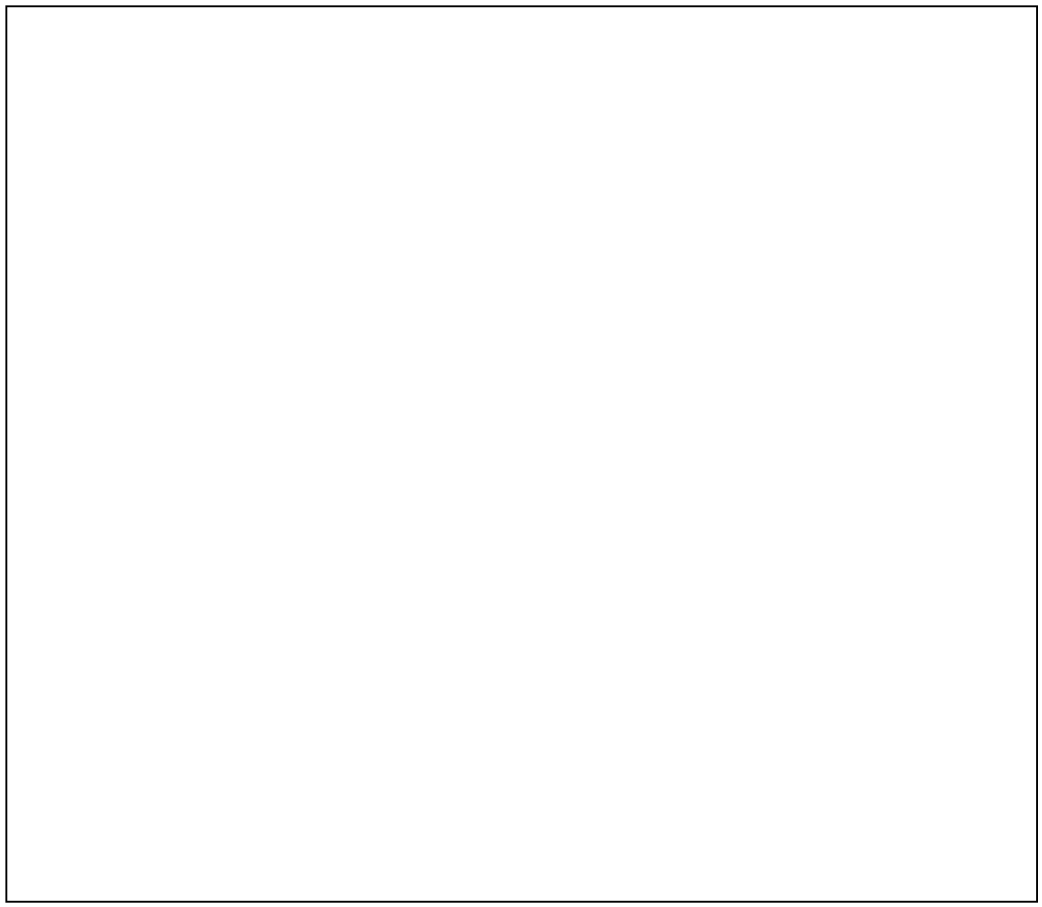

SUMMARY AND CONCLUSIONS

The Stage and Direction of the Chinese Effort

A. After some 15 years of effort, China is now beginning to deploy strategic weapon systems. Starting from scratch with a limited industrial, technical, and scientific base, and denied Soviet assistance after 1960, the Chinese had to proceed on their own with the development of requisite skills, the construction of basic facilities, and the design and testing of nuclear weapons and delivery systems.

B. China clearly intends to attain the status of a major nuclear power, accepting the economic burden involved and the risks of slowing basic economic development through diversion of scarce resources and skills to specialized defense tasks. This is evident on the China scene today where activity in both general purpose and strategic military programs is at an all time high. Though any forecast of China's future must allow for additional periods of disruption and upset, it seems reasonable to assume that the existing high priority for strategic programs will endure in the years ahead.

C. Obviously, China's efforts in the military field will be limited by available skills and resources. But we lack the data to place any useful ceiling on the level of the Chinese effort. Based on the pattern of Chinese military programs to date, the Chinese seem sensitive to the dangers of trying too much too fast in their strategic programs in a country whose population growth threatens continuously to outstrip economic growth. While stressing the wide-ranging and ambitious nature of China's present effort, we should also stress its relatively moderate pace. The Chinese have been deliberate in testing weapon systems and in no apparent rush to undertake costly and large-scale

deployment of weapon systems of limited capabilities. No doubt the large issues of priorities and costs serve to trouble Chinese internal politics at the highest levels,

D. No elaboration of the rationale for developing a strategic force nor any discussion of strategic doctrine has appeared in China. Evidently some principles other than Mao's "peoples' war" doctrine guide the costly and wide-ranging strategic weapon programs now underway in China. It seems most likely that Peking seeks through the development of a substantial nuclear force to enhance its claim to great power status, to deter the USSR and the US from the resort to force against China, and to insure for China a leading and dominant political role in Asia.

Strategic Missiles

E. It is probable that China has now deployed some CSS-1 medium-range ballistic missiles (MRBMs), This missile has a range of about 600 n.m. and probably uses non-storable liquid propellants. We estimate that there might be about 10 units deployed

F. A second missile, the CSS-2, has a range of at least 1,400 n.m. and probably uses storable propellants. We believe that the development stage of this system is well advanced and that it probably has reached the point of deployment, although there is uncertainty about this. While the CSS-2 is superior to the CSS-1 in range and reaction time, it probably does not incorporate any great improvement in accuracy

G. The Chinese are developing another liquid-propellant missile. This missile, which appears to have sufficient range to provide full coverage of the USSR, could be ready for deployment by late 1973 or early 1974. This system, referred to as the "Ching-yu" missile, is a two-stage vehicle with the first stage probably incorporating the design and technology of the CSS-2. Its maximum range is unknown, but our

calculations, [redacted] suggest that any capability against the continental US would be marginal at most.

H. Further down the road, China is almost certain to deploy a large intercontinental ballistic missile (ICBM) capable of full coverage of the continental US. China could have a large, liquid-propellant ICBM ready for deployment as early as 1974 but more likely a year or two later. When full range testing into the Pacific or the Indian Ocean occurs, we should be able to learn more about the performance of the system and to make more confident estimates of its probable initial operational capability.

I. In addition to these four liquid-propellant missiles, China has a large and ambitious program underway for the development and production of strategic missiles using solid propellants. If flight testing begins within a year, solid-propellant strategic missiles—most likely in the MRBM or IRBM class—might be ready for deployment as early as 1974, but 1975 or 1976 is more likely in view of the special problems involved.

Submarines

J. China has also shown an interest in nuclear-powered ballistic missile submarines (SSBNs), and it is building shipyards which appear capable of producing and servicing such submarines. We judge that China could have SSBNs equipped with solid- or liquid-propellant missiles as early as 1976. But this would require a crash effort and early success in overcoming a multitude of support, training, and operational problems. Thus, even if they now have a prototype under construction, the first Chinese SSBN probably will not be operational until after 1976.

Bombers

K. Production of TU-16 medium bombers began in late 1968 and has reached a level of two per month. About 30 of these aircraft are now operational. The TU-16 can carry a 6,600 pound bombload to a radius of about 1,650 n.m., but it is relatively slow and highly vulnerable to sophisticated air defenses. While there is no doubt that some TU-16 crews are now sufficiently trained to deliver thermonuclear (TN) bombs to designated targets, it will be at least a year

and probably longer before the Chinese have two or three regiments with crews trained to perform coordinated missions against modern air defenses.

Nuclear Bombs and Warheads

L. To arm its delivery systems, China has concentrated successfully on the development of a [redacted] TN device and could now have bombs and warheads with this yield in stockpile. It could also have fission weapons [redacted] It is likely that the Chinese are working to expand production of fissionable materials, and although there is a broad range of possible error in estimating the output of these materials, it seems clear that China will have ample fissionable material, particularly after 1973, to arm the strategic delivery systems it is likely to deploy.

Space

M. The two earth satellites launched by China over the past 18 months marked the beginning of what probably will be an ambitious space program. Over the next few years, we expect continued launches involving larger and increasingly sophisticated payloads, partly in response to urgent military needs for targeting and geodetic data.

Projected Forces

N. We expect whatever strategic forces China now has deployed to be augmented gradually over the next two years, principally by a build-up of CSS-2 units and by the continued series production of TU-16 medium bombers. Beyond 1973 and for the period five years ahead, there is much uncertainty (Section VI attempts to project to that period). But one thing is certain: the force will be weighted heavily on the side of systems capable only of reaching targets in Asia (including US installations there) and the USSR. A capability against the continental US may begin to emerge, however, toward the end of this period.

DISCUSSION

I. COMMUNIST CHINA'S NUCLEAR WEAPONS CAPABILITIES

1. China is on the road to becoming a major producer of nuclear weapons. While its nuclear program follows a deliberate pace, it can hardly be described as "experimental" as Chou En-lai would have it. We believe China could have in stock some thermonuclear (TN) weapons [redacted] and some fission weapons [redacted]

2. This section summarizes the nuclear testing program and estimates when the Chinese could have various weapons ready to deploy with bomber and missile forces. It discusses the research and development (R&D) and weapons production facilities and examines China's nuclear stockpile system. Finally, it estimates the quantities of fissionable materials the Chinese will have available through mid-1976.

A. Nuclear Weapons Testing

3. Through mid-1971, the Chinese have conducted 11 nuclear tests, 10 of which were conducted in the atmosphere at or near the Lop Nor Test Site. The other was an underground test conducted about 75 n.m. northwest of Lop Nor. (See Table I.) The data collected and the analyses we have performed on the Chinese atmospheric tests have provided a fair picture of the nature and results of individual tests and of the scope, pace, and evolution of the testing program.

4. The major thrust of the Chinese effort to date has clearly been the development of a [redacted] TN weapon. [redacted]

TABLE I

CHINESE COMMUNIST NUCLEAR TESTS

Test	Date	Delivery
CHIC 1	16 Oct 64	Tower
CHIC 2	14 May 65	Airdrop
CHIC 3	9 May 66	Airdrop
CHIC 4	27 Oct 66	Missile (Probably CSS-1) near Lop Nor
CHIC 5	28 Dec 66	Tower
CHIC 6	17 Jun 67	Airdrop
CHIC 7	24 Dec 67	Airdrop
CHIC 8	27 Dec 68	Airdrop
CHIC 9	22 Sep 69	Underground
CHIC 10	29 Sep 69	Airdrop
CHIC 11	14 Oct 70	Airdrop

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[redacted]

[redacted]

It is evident that the Chinese have successfully passed through two critical stages in the development of nuclear weapons—successful testing of a design concept and refinement of the design to reduce weight and size and increase efficiency. In pursuit of their objectives, they have tested at a relatively slow pace but have incorporated a number of changes in each successive design.

[redacted]

B. Nuclear Weapons Development

10. Given a satisfactory test device, the next step is engineering an operational weapon—either an aircraft bomb or a missile warhead—that can be series produced.

[redacted]

11. Another critical unknown is which test design the Chinese have chosen to weaponize.

[redacted]

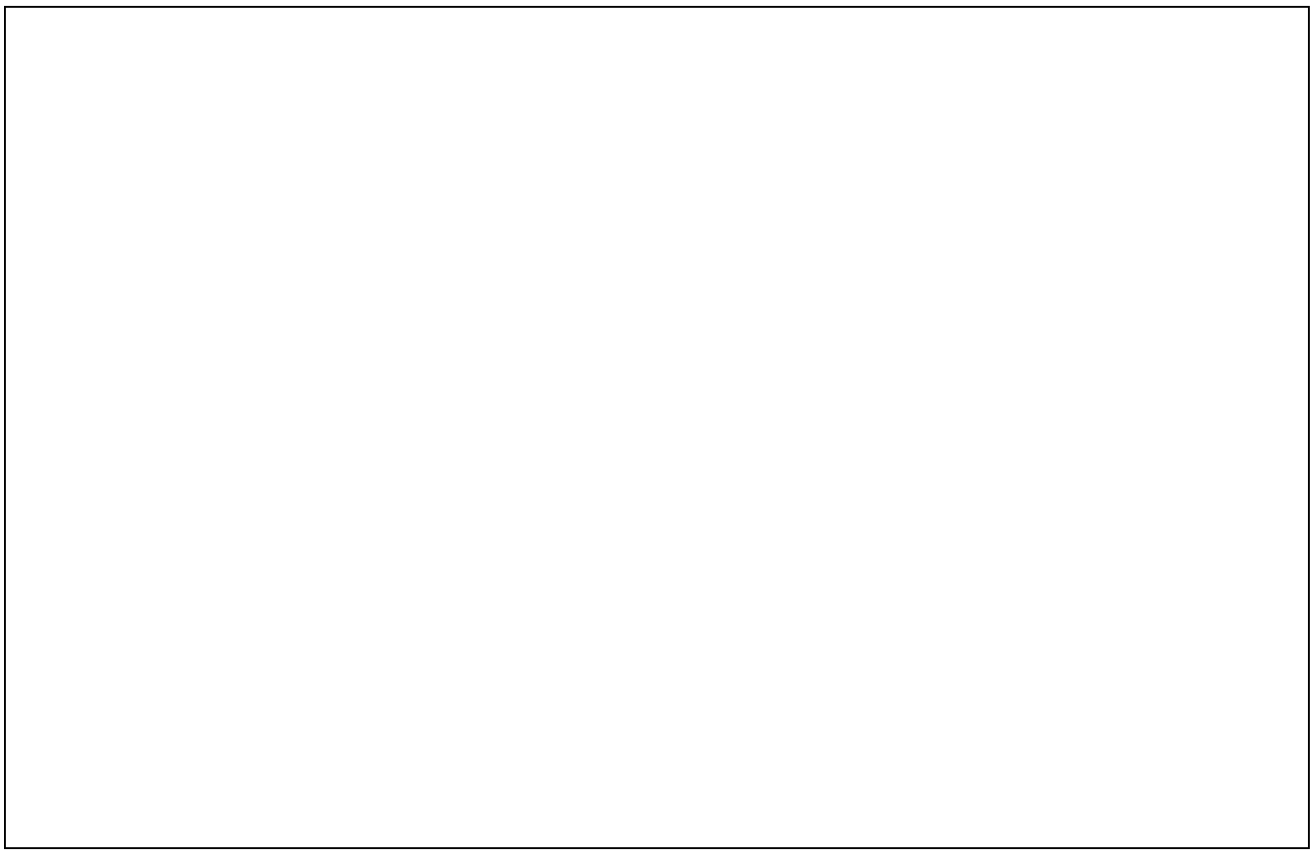
12. *Nuclear Bombs*

We estimate that these weapons could have been in stockpile as early as 1965-1966, but the only carriers then available were a dozen obsolete TU-4s and the two TU-16s the USSR had provided in 1959.

15. As in the case of early fission designs, we think the Chinese stockpiled few if any TN bombs based on early tests.

The Chinese may have produced a few bombs based on this design for contingency use, but anticipation of more efficient designs probably would have limited allocation of scarce nuclear material to such a weapon.

17. *Nuclear Warheads.* The same problems and possibilities exist for nuclear warheads for strategic missiles.



[redacted]

C. Nuclear Weapons Control, Storage, and Logistics

19. How the Chinese will control, store, and handle nuclear weapons for their strategic forces is not yet clear. We would assume that the authority to use strategic nuclear weapons would be reserved by the highest authority in Peking [redacted]

20. The evidence on the system to be developed for storage and handling of nuclear weapons—from which it might be possible to infer something as to command and control—is still very limited. We believe that the Chinese have a national stockpile facility to accommodate any weapons they may have produced for stockpile. Operational storage sites for nuclear bombs at airfields have not been identified in China, but we cannot rule out the possibility that some nuclear weapons may already be dispersed to temporary storage facilities at some bomber-capable airfields.

21. Nor have facilities constructed specifically to store missile warheads been identified. With deployment of operational missile units the Chinese probably will provide facilities at the missile site or with the unit for check out and mating of the warhead and possibly for separate or temporary storage.

22. We do not know whether the Chinese will keep nuclear warheads with missile units continuously or keep them in a central stockpile or stockpiles, delivering them to operational units only in times of crisis. Missiles deployed at soft sites will probably not be continuously on alert, and the Chinese could design a logistics system to rapidly deploy warheads from nearby stockpiles to these sites while the missiles were being readied. Missiles in hard sites can be kept at a higher state of readiness for extended periods, and when silo deployment begins the Chinese almost certainly will keep warheads at the sites or on the missiles.

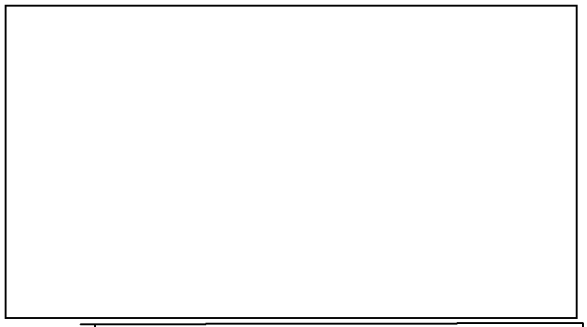
D. Nuclear Materials Production

23. China appears to have adequate domestic reserves of uranium ore to meet its needs. And the Chinese seem to have developed the necessary facilities for concentrating uranium ore and for processing uranium feed materials.

Uranium-235 Production

24. The only gaseous diffusion plant known to be in operation in China is at Lanchou. This plant is based on early Soviet designs and was begun with Soviet help. We believe that all or part of the equipment within the Lanchou facility was furnished by the Soviets from one of their earlier plants such as the small Section A plant at Verkh Neyvinsk. The Lanchou plant was completed by the Chinese in the early 1960s and probably began producing in mid-1963.

[redacted]



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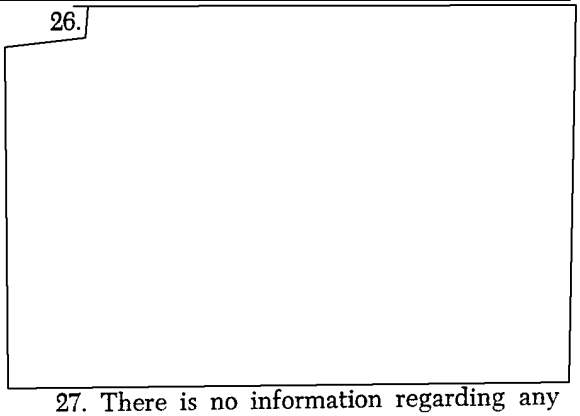
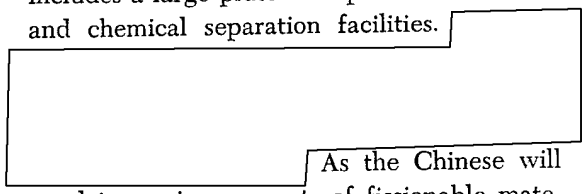


27. There is no information regarding any major construction at the Lanchou plant since its start up. The Chinese may have begun some minor modifications to upgrade gradually some of the equipment; but, even so, such improvements would lead only to marginal production increases well within the currently estimated range of production. Thus, we do not believe that production at this plant will be significantly upgraded during the period of this estimate.

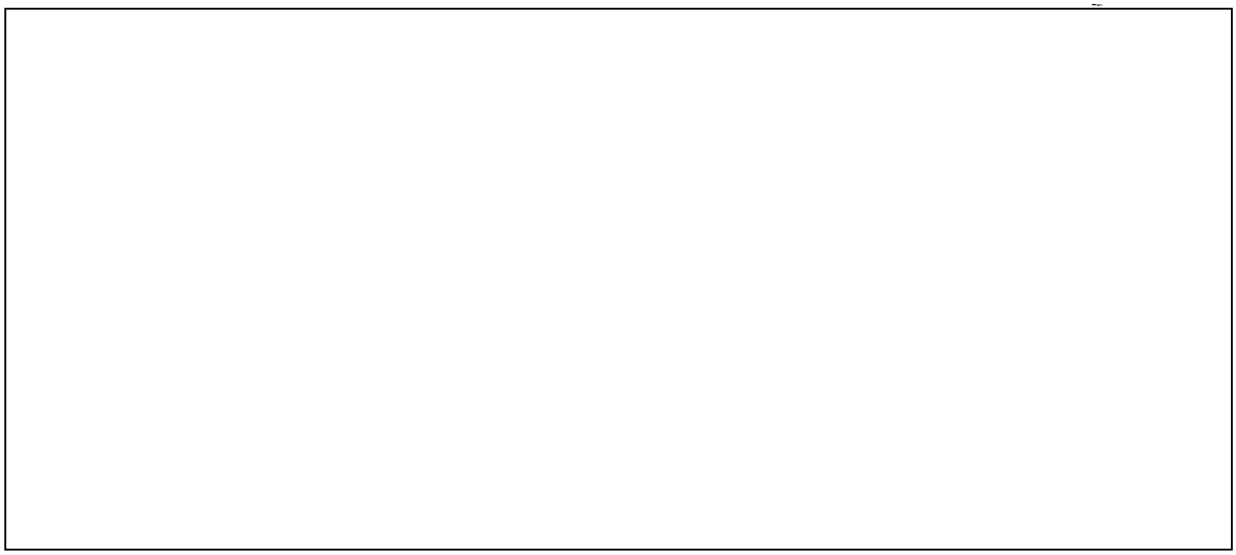
28. Chinese requirements appear to be such that it is likely they will seek to expand their production of U-235. The figures in Table III include postulated production rates if another gaseous diffusion plant were to come into operation in 1972 or 1973. Because there is very little on which to base projections of the output of any such new facility, these figures are subject to a very wide margin of error.

Plutonium Production

29. There is good evidence that there is a nuclear energy complex near Yumen in western Kansu Province. We believe this complex includes a large plutonium production reactor and chemical separation facilities.



As the Chinese will need increasing amounts of fissionable materials for their expanding nuclear program, ad-



ditional facilities for production of plutonium may be under construction somewhere in China.

30. We believe the Chinese began construction at Yumen in the late 1950s, probably with substantial Soviet assistance. The reactor probably went into operation by about 1967. Western plutonium separation processes have been fully described in open literature since the mid-1950s, and it is likely that the Chinese have employed the best of such modern technology to meet their chemical separation requirements. Thus we estimate that the Chinese can easily process the yearly output of their reactor.

31. As in the case of U-235, it is likely that the Chinese will seek to expand plutonium output. Table IV shows our estimate of plutonium production from Yumen through 1976.

II. COMMUNIST CHINA'S STRATEGIC MISSILE PROGRAM

Introduction

32. Communist China's extensive program to develop and produce nuclear weapons is matched by a similarly ambitious program in the field of strategic missiles. China has already developed an MRBM with a range of some 600 miles and may have begun its deployment; we believe the Chinese have a missile with a range of some 1,400 miles in the advance stages of development and possibly ready for deployment; and we believe that work is proceeding on another missile with a range of perhaps 2,000 n.m. The Chinese are also believed to be developing a large intercontinental ballistic missile (ICBM) which has entered the flight test phase. In addition to these liquid-propellant systems, China is engaged in an extensive program for the development of solid-propellant strategic missiles, and the static testing of such rocket motors is probably well underway.

33. Communist China's strategic missile program began with extensive Soviet assistance.

Formal agreements were signed in late 1957 or early 1958, but help had probably started a year or two earlier. We do not know in detail what the Soviets agreed to provide, but by the time the Soviets withdrew their support in the summer of 1960 they had given the Chinese the foundations for native missile development programs. Soviet missile specialists from development and production centers in the USSR were stationed in China by 1958, and the guided missile development, static test, and production facility at Ch'ang-hsin-tien near Peking was under construction in 1959. The Soviets also planned and, in 1958, helped begin construction of the missile test center at Shuang-ch'eng-tzu.

34. [redacted] the Soviets provided exemplars of the SS-1b (Scud A) tactical missile and the SS-2 (Sibling) short-range ballistic missile. We think the Soviets gave similar exemplars of a system with a range of about 650 n.m.—either the SS-3 (Shyster) or one of the other systems they were testing to about this range. Most of the ballistic missiles we think the Soviets supplied were derived from the German V-2 system, employed cryogenic propellants and radio-assisted guidance, and were obsolete or obsolescent by Soviet standards of the time. After the Soviets withdrew in 1960, the Chinese moved ahead with an extensive R&D effort of their own.

A. China's First-Generation Medium-Range Ballistic Missile System

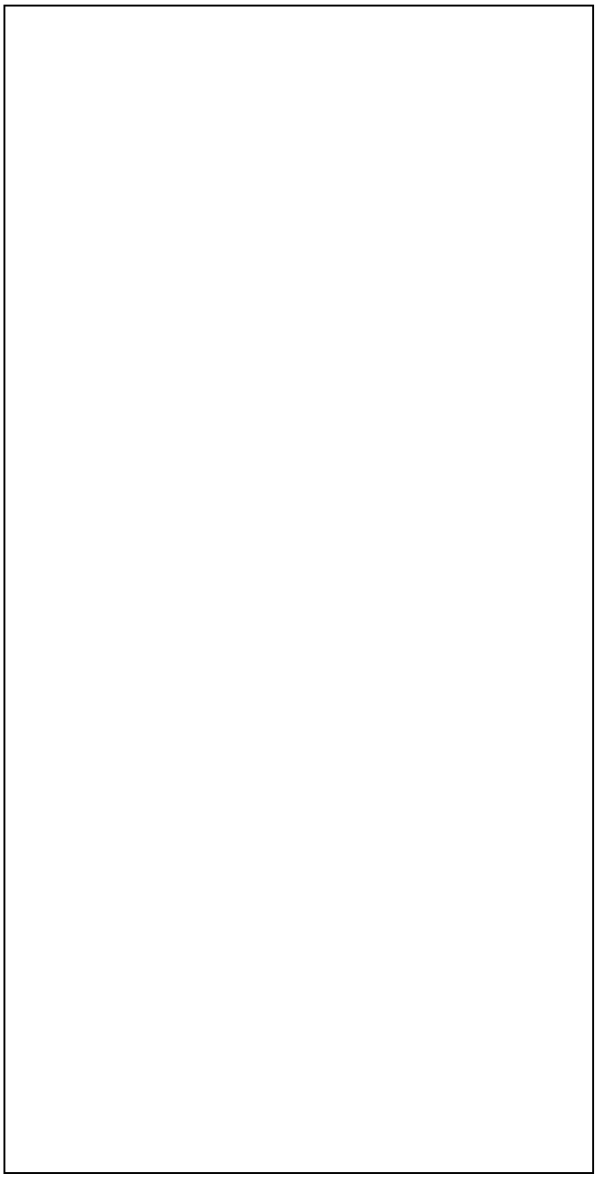
35. After a few firings of Soviet-supplied missiles, the Chinese in about 1963 made the transition to testing their own version of a Soviet MRBM. This missile we later designated the CSS-1. The development program probably culminated in the firing on 27 October 1966 [redacted] was apparently carried by a CSS-1 missile from Shuang-ch'eng-tzu some 450 n.m. to the Lop Nor area. This nuclear test (designated CHIC 4) indicated the Chinese had a high degree of confidence in the CSS-1, and it may have been a final proof test of the system. It is likely, however, that since that time there have been additional firings related to modifications of the system.

CSS-1 Technical Characteristics

[redacted] the system resembles the early Soviet systems which evolved from the V-2 and is not a direct copy of any that reached operational status. We think it most closely resembles the Soviet SS-3.

37. There is no doubt that the CSS-1 is a liquid-propellant system, and there is now evidence that the propellant is non-storable, most likely liquid oxygen and alcohol. Initially, the Chinese probably had a radio-inertial guidance system which operated on a principle generally similar to that used with at least early versions of the SS-3. We think it likely that this guidance system was subsequently replaced with an all-inertial system. We have

[redacted]

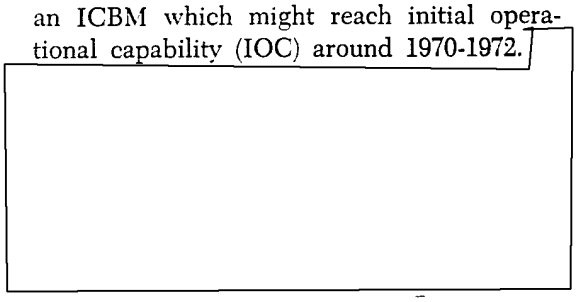


ESTIMATED TECHNICAL CHARACTERISTICS OF THE CSS-1 MEDIUM-RANGE BALLISTIC MISSILE

Configuration	Single stage
Length	72 to 74 feet
Diameter	About 5.5 feet
Range	About 600 n.m.
Warhead Type	Nuclear
Propulsion	Single, fixed position, liquid-propellant rocket engine
Propellants	Probably cryogenic liquid—liquid oxygen and alcohol

Medium-Range Ballistic Missile

41. Following the missile-delivered nuclear test (CHIC 4) in October 1966, the general view of the Intelligence Community was that deployment would follow at an early date. At that time we had no knowledge of the intermediate-range ballistic missile (IRBM) program and assumed China was devoting its talents and resources to the development of an ICBM which might reach initial operational capability (IOC) around 1970-1972.



42. However sound our logic, we were wrong—but we do not know why. From the fall of 1966 through early 1969 there appeared to be a decided lull in the MRBM program. This apparent hiatus led to increasing speculation that the Chinese did not intend, after all, to deploy the system—particularly since a production program for the TU-16 bombers was underway which could provide an interim strategic force clearly able to carry China's TN weapons. The picture began to change in 1969-1970, however, as evidence accumulated of new activity involving the MRBM.

43. If this activity means that China has begun deployment of the MRBM, it still does not account for the apparent two to three year

gap between completion of the development phase and deployment. Nor does it account for the apparent decision to resume MRBM activity at a time when we now know the Chinese were making good progress with a much superior missile (the Chinese IRBM). One possible answer is that the Chinese did, in fact, intend to forego MRBM deployment but that the continued deterioration in Sino-Soviet relations and the Soviet intervention in Czechoslovakia brought a reversal of this decision sometime in 1968. Other possibilities are that the missile was not really ready for deployment by the end of 1966, or that the Chinese decided to wait for a compatible TN warhead. In any event, and in view of the unknowns, it seems clear that the history of the MRBM program provides us with few guidelines for judging the probable pace of other Chinese missile programs or for making any broad judgment concerning Chinese strategic concepts.

44. Although we have not detected any CSS-1 deployment, we believe that the Chinese probably have a small number of CSS-1 units in the field. The Chinese have a compelling requirement to insure that some of their missiles could survive an enemy's disarming strike, because otherwise the credibility of their fledgling missile force as a deterrent would be seriously reduced. Since nothing we have observed in connection with the CSS-1 suggests that it is intended for silo deployment, the only means open to the Chinese for insuring the survival of some of their missiles is to conceal them in some fashion so they cannot be targeted. One way would be simply to deploy them in inconspicuous field sites. It would also be possible to conceal missiles and support equipment in structures such as aircraft hangars, in tunnels or caves. Such efforts at concealment would degrade the reliability and reaction time of the system and add considerably to operational costs, but it might be a price the Chinese are willing to pay.

45. Another possibility would be to build many more launch sites than the number of missiles, moving missile units among sites at frequent intervals. Even more than concealment, however, this tactic would increase operating and maintenance costs and reduce the effectiveness and readiness of the force. Thus we believe it unlikely that the Chinese would choose this option.

46. Projected force levels for the MRBM are discussed in Section VI on future forces.

B. China's Intermediate-Range Ballistic Missile System

47. In early 1970 [redacted] the Chinese were working on a second missile system, now designated the CSS-2 IRBM.[2] There is evidence that the Chinese have established another rangehead near Wu-chai in Shansi Province about 230 n.m. southwest of Peking for the testing of the CSS-2. We believe that the Wu-chai launch facility was probably far enough along to begin conducting test firings by about late 1968. It seems likely, however, that a few early developmental firings were conducted from Shuang-ch'eng-tzu prior to 1968.

48. [redacted] The length of time this missile seems to have been under development is probably sufficient for the Chinese to have

[redacted]

completed the essentials of a development program and to have worked out most technical problems. Indeed, one view is that CSS-2 troop training could have begun as early as mid-1969. The majority view is that there is inadequate evidence to establish this point. All agree that even if there were some kind of training underway as early as 1969, it is likely that additional R&D work remained to be done.

[redacted]

49. By mid-1971, however, the Chinese may have been ready to begin troop-training firings with the CSS-2. If troop training did, in fact, begin then, it would be reasonable to expect that initial deployment would now be underway. We have no good evidence of deployment, but as described in the discussion of CSS-1 deployment, there are means whereby the Chinese could conceal a deployment program, particularly early in the program when the number of missiles deployed would be small.

50. In sum, on the basis of the available evidence we estimate the CSS-2 is at the point of deployment, probably in soft sites. If it has not yet begun, it probably will by early 1972. Deployment projections are set forth in Section VI.

Technical Characteristics of the CSS-2

[redacted] We estimate that it uses storable propellants and that it uses some form of all-inertial guidance. The maximum range of the missile could exceed 1,500 n.m. Our estimates of the capabilities of the missile are based in part on analogies and computer simulations using various combinations of assumptions.

[redacted]

ESTIMATED TECHNICAL CHARACTERISTICS OF THE CSS-2 INTERMEDIATE-RANGE BALLISTIC MISSILE

Configuration	Single stage
Length	70 feet or so
Diameter	About 8 feet

[redacted]

C. China's Intercontinental Ballistic Missile Program

52. Evidence now available indicates that China has recently begun reduced range flight tests of a vehicle which, if used as an ICBM, would be capable of reaching much or all of the US. This activity at the Shuang-ch'eng-tzu rangehead is in addition to that at a new flight test facility at Ching-yu, near the North Korean border. The missile system being tested at this latter facility is probably also an ICBM in the strict sence of the term,[3] but at the moment we think it will not have a significant capability against the continental US.

[redacted]

[3] An ICBM is defined as a system capable of delivering a payload more than 3,000 n.m. A missile with a range of 3,000 n.m. would cover all of the USSR, but the Chinese would need an ICBM with a range of at least 5,000 n.m. to reach more than a few targets in the continental US. A system with a range of 5,500 to 6,000 n.m. could reach virtually all of the US.

[redacted]

Developments at Shuang-ch'eng-tzu

54. We believed for a number of years that China was engaged in the development of an ICBM system that would be able to provide reasonably good coverage of the continental US as well as the Soviet Union and other areas. We thought we had firm evidence of such a program during the 1965-1966 period when construction of a large new launch facility began at the Shuang-ch'eng-tzu rangehead.

55. At that time we believed that the Chinese intended to begin ICBM flight tests shortly, but we now believe that any early firings from this large launch complex were part of the CSS-2 IRBM program rather than work aimed directly at an ICBM. We also think that it was probably used for China's two earth satellite launches.

56. We have some fairly convincing evidence which indicates that the initial flight test of a large launch vehicle took place on 10 September 1971. This evidence leads us to conclude that the firing involved a reduced range flight test of a multistage, storable liquid-propellant vehicle fired to an impact area in far western China [redacted]

57. We cannot be sure at this point whether the Chinese will conduct any additional in-country reduced-range firings of this large vehicle or go directly to long-range tests to impact areas outside their national borders. We think it likely, however, that a few more reduced-range tests will be conducted.

58. It is our present judgment that the system now undergoing preliminary testing will be used as an ICBM. It may also be used as a satellite launcher, and could place a payload weighing up to several thousand pounds into a low-earth orbit. Such a launch would provide additional important data on the system's overall capability and, if successful, would give the Chinese major propaganda benefits. An approach such as this might be politically attractive to the Chinese and would to some extent parallel the early Soviet ICBM effort. Indeed, we would be surprised if China did not plan to use this vehicle for both strategic missile and space applications.

The Ching-yu Missile System

59. Another—and interrelated—factor that seriously complicates assessment of the current status of China's ICBM program is our inability to determine the precise nature of the program underway at Ching-yu. We believe that the Ching-yu launch facility was activated during the fall of 1970. As of mid-1971 we are reasonably confident that there had been only one firing from Ching-yu [redacted]. There are indications that it is a two-stage missile and that it is fired from a developmental—as distinct from a prototype of a deployed site—silo. Depending on the assumptions made about the size, the specific propellant combination, the structure factor (the ratio of the dry weight of a missile stage to total stage weight, including propellants), and the weight of the RV, the missile could have a wide range of possible capabilities. [redacted]

64. On balance, we believe the evidence tends to favor the conclusion that the Ching-yu system is a two-stage variant of the CSS-2 IRBM. Although we have little definitive information on which to base a confident judgment of its technical characteristics, we estimate the system, depending upon the levels of technology and propellants used, could deliver a payload [redacted] to a maximum range that might be as low as 3,000 n.m. or as high as 4,500 n.m. Only the high side would bring any part of the continental US into range, and this only if the missile were deployed in extreme north China, close to the Soviet border. Thus it appears that this system is not designed to provide the Chinese with coverage of the US.

[redacted]

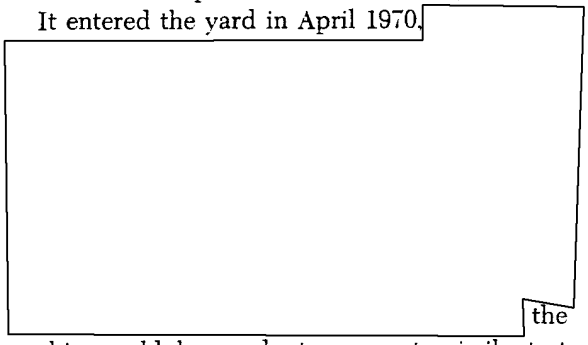
Prospects for Full-Range Testing

65. The maximum range possible for flight testing of missiles within China is less than 2,500 n.m. Hence, when China gets to the stage of full-range testing of missiles capable of ICBM distances, it will have to fire to

impact areas outside its borders. Such tests are necessary to obtain technical data to confirm the performance of the RV and the overall system accuracy and reliability at operational ranges.

66. We have no basis for judging whether the Chinese will choose the Pacific or the Indian Ocean as the impact area for their long-range tests. In the case of firings from Ching-yu, the Indian Ocean might be preferable in order to ensure that the booster stage would not fall on foreign territory, but in the case of firings from Wu-chai or Shuang-ch'eng-tzu this would not be a factor.

67. Recent evidence indicates that at least one Chinese missile range instrumentation ship (MRIS) will be available for operational use in the near future. A large merchant ship has apparently been outfitted as an MRIS at the Tung-lang shipyard in Canton during the past year. This vessel is over 400 feet long and has a displacement of about 12,000 tons. It entered the yard in April 1970,



the ship could be ready to support missile test operations into ocean impact areas by the end of this year. Several smaller vessels have also been observed which appear to be undergoing conversion to an MRIS role.

Prospects for Initial Deployment

68. On the basis of US and Soviet experience, we estimate that it will take the Chinese a minimum of about three years to bring an ICBM with a good capability against the US (that is, a range of at least 5,000 n.m.) from the first flight test to the point where it is ready for deployment at an operational site. Because the Chinese are likely to encounter developmental and management problems common to new programs and as a result of our study of the CSS-1 and CSS-2 programs, we think it will probably take closer to four years to reach IOC. If significant problems occur during flight testing, the time required to reach IOC would be commensurately longer.

69. The vehicle fired from Shuang-ch'eng-tzu on 10 September 1971 seems to be the best candidate for an ICBM with a good capability against the US. If this proves correct, and using the guidelines described above, the earliest IOC date of this system would be late 1974, or more likely a year or two later.

70. If, as seems likely, the missile being tested from Ching-yu is a two-stage version of the CSS-2, it could be ready for deployment sometime in 1973. We base this relatively early IOC estimate on the fact that the Ching-yu program would have benefited from CSS-2 firings and the first two satellite launches. In the unlikely event that this is an entirely new system in the ICBM class, it will probably be late 1973 or, more likely, late 1974 before it is ready for deployment. These IOC dates would slip a year or two if test difficulties occurred or, as seems to have been the case so far, the program is slow-paced.

71. The evidence that the Chinese are working on silo development indicates that they decided several years ago to deploy strategic missiles in hardened silos, and it now seems likely that initial ICBM deployment will be in silos. Obviously, to meet the IOC's discussed above, silo construction would have to begin during the flight test programs. At least 18 months would probably be required for construction of a deployed silo site. Construction

of fixed soft sites would probably take at least a year.

[redacted]

D. China's Solid-Propellant Strategic Missile Program

73. In the early 1960s the Chinese embarked on a well organized and comprehensive program to develop strategic missiles using solid propellants. Beginning in 1964-1965 the Chinese made a major effort to import technology, equipment, and materials which play a vital role in the production of solid-propellant rocket motors. They bought advanced grinding, pulverizing, and sorting machines suitable for processing the oxidizer ingredient of composite base propellants; large industrial X-ray machines that can detect flaws in propellant grains; and precision machine tools suitable for case fabrication. They imported large quantities of materials such as ammonium perchlorate and polybutadiene which are directly applicable to R&D on composite base propellants.

74. And they undoubtedly drew on open source technical literature, especially that of American origin, which comprehensively treats solid propellants. Chinese scientific literature since 1960 reflects a significant knowledge of foreign solid-propellant technology. For example, a series of articles published in 1964-1965 comprehensively reviewed US problems with the structural design and stress analysis of solid-propellant grains and discussed factors affecting their operational use. Other articles dealt with related subjects such as filament winding techniques for motor case fabrication.

75. The Chinese have also conducted a research effort of their own. During the 1963-1966 period the Institute of Applied Chemistry of the Academy of Sciences was engaged in butadiene polymer research, applicable to synthetic rubber technology but also a prerequisite to the development of rocket motors using polybutadiene as a bonding agent and fuel. Polybutadiene is one of the propellant binders [redacted] and is probably under development in China for the same purpose. The same institute published a series of research reports in 1966 which indicate that ammonium perchlorate production techniques were being investigated. Ammonium perchlorate has major application only as an oxidizer in composite base solid propellants.

76. These research efforts tie in well with the Chinese imports of large quantities of ammonium perchlorate from Japan from mid-

1966 to early 1968 (and unsuccessful attempts to import more from Western countries) and the imports of polybutadiene in 1965-1970 (and two unsuccessful attempts to purchase complete production plants).

77. Early in the program the Chinese almost certainly constructed the facilities necessary for R&D work on solid propellants for strategic missiles, and we have identified a large solid-propellant rocket motor production complex near Hu-ho-hao-t'e in Inner Mongolia. We estimate that at least limited production of rocket motors was underway at Hu-ho-hao-t'e by 1969, and that static testing may have been underway by the middle of the year.

78. In view of the problems inherent in developing large solid-propellant rocket motors—including propellant formulation, case bonding, and preventing propellant cracking—we believe the Chinese will need at least two and probably three or more years of static testing and advanced development work before the first flight test. Thus, if static testing did begin in 1969, the first flight tests could begin as early as this year although 1972 is more likely.

79. Simple flat launch pads could be used for the initial flight tests—there is ample precedent in the US, France, and Soviet programs. We believe the Chinese will want to deploy solid-propellant systems in silos, and will construct a prototype launch facility. Experience they will have gained from the silos for liquid-propellant missiles will be useful even though silos for solid-propellant missiles probably will differ considerably, particularly because they do not require systems for venting exhaust.

80. A minimum of about three years of flight testing probably would be required to solve problems of flight stability, thrust control, and guidance, and it will probably take a year or two longer to reach IOC because of technical and management problems common to new programs. If flight testing begins within a year, solid-propellant strategic missiles might be ready for deployment as early as 1974, but 1975 or 1976 is more likely. The Hu-ho-hao-t'e facility probably will be capable of full series production by that time.

81. It is too early to determine precisely what types of ballistic missiles will be developed and produced at Hu-ho-hao-t'e. We think the Chinese will concentrate initially on developing land-based MRBMs or IRBMs to master solid-propellant technology before moving on to an ICBM. Even if an ICBM is already in an early stage of development, we think it will probably not reach IOC before late in the decade. The Chinese may have already elected to develop a solid-propellant submarine-launched ballistic missile (SLBM) and work on such a system could now be under way at Hu-ho-hao-t'e. If this is the case, the missile could be ready as early as 1975 or 1976. (See Section IV, which treats the ballistic missile submarine program in detail.) Solid-propellant missiles would have to be quite large to carry any of the TN weapons the Chinese have tested so far, and the Chinese may elect to develop a lighter TN warhead of lower yield or to arm the solid-propellant missiles with fission warheads.

82. The facilities at Hu-ho-hao-t'e probably are adequate to support several missile development and production programs simultaneously. The production rate of the facility depends on the number and type of systems under development and production at any time, but probably is sufficient to support development and production programs for more than one type of system at any given time.

III. CHINA'S BOMBER FORCE

83. Beginning in the early 1950s, the USSR gave China major help in establishing an air

force that has now grown to be the world's third largest. The Soviets provided over 2,000 aircraft, mostly fighters and light bombers, trained Chinese air crews, and supervised construction of airfields and aircraft production facilities in China. As part of this program they delivered two TU-16 Badger medium jet bombers in 1959 and helped the Chinese begin construction of facilities for TU-16 production.

84. When the Soviets withdrew their assistance, work stopped for several years. But the Chinese began moving ahead on their own in the mid-1960s and in late 1968 the first Chinese built TU-16 was rolled out. We estimate that during 1969 the Chinese produced approximately 1 aircraft every 2 months, gradually increasing the rate to the present level of about 2 a month. About 40 TU-16s were produced by mid-1971.

A. Medium Bomber

85. The TU-16 is highly versatile, having been used by the Soviets as a free-fall bomber, an air-to-surface missile (ASM) carrier, a tanker, in electronic intelligence and photo-reconnaissance roles, and in antiship and anti-submarine warfare (ASW). The TU-16 can carry a 6,600 pound bombload to a radius of about 1,650 n.m. or to about 2,300 n.m. with one mid-air refueling. It has a maximum bombload capacity of about 20,000 pounds at shorter ranges. Most key targets in Asia are within the unrefueled radius of 1,650 n.m. with a normal bombload of 6,600 pounds.

86. We assume that the Chinese will organize and train most of their TU-16 force for a strategic attack role

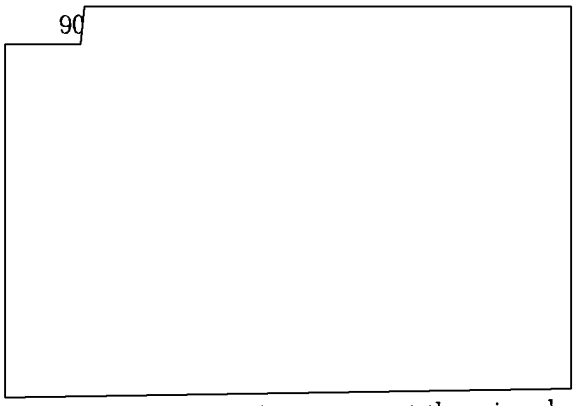
[redacted]

. The TU-16 production program is a costly one and appears geared to a substantial production run. The investment appears excessive simply to acquire a long-range naval reconnaissance vehicle, an antiship weapon or a conventional bomber. It has been used for airdrop tests which were part of the TN weapons program.

87. The aircraft does have serious shortcomings in a strategic role since it is relatively slow and highly vulnerable to sophisticated air defenses. But with properly trained and motivated crews there are various ways in which the Chinese could hope to increase the chances of at least some planes reaching their targets in such an environment. These would include the commitment of many aircraft against a single target, the use of low profile approaches to avoid detection combined with in-flight refueling to extend range, and the provision of an ASM capability.

88. There is no evidence to indicate that the Chinese now have an in-flight refueling capability. We consider it likely, however, that tanker versions will be produced once the aircraft crews have developed proficiency in basic operations and are ready to attempt the more complicated maneuvers of in-flight refueling.

89. There is no evidence of an active program in China which we can identify clearly as ASM related, although the Soviets helped build what may be an ASM support facility at Shuang-ch'eng-tzu airfield in the late 1950s. In theory, the Chinese could adapt their version of Soviet SS-N-2 (being produced for naval use) for use as an ASM by 1972 if they are already at work on such a program. But this missile would only have a range of about 50 n.m. An ASM of native design and longer range would probably take five years to develop and might involve problems of aircraft stability, and control and accuracy of the missile that would extend this time even more.

90 

91. We believe that at present there is only one TU-16 regiment and that it has about 30 assigned aircraft. As more TU-16s become operational, additional regiments will presumably be formed and deployed to some of the other 40 odd airfields in China which have runways long enough to handle the aircraft. (Of these 40, about two-thirds have the facilities to support sustained operations.) Some deployment should begin by the end of this year. Thus while there is no doubt that some crews now available could fly aircraft carrying TN bombs to designated targets, it will be at least a year and probably longer before the Chinese have two or three regiments whose crews are uniformly and highly trained and "ready" for complicated missions against modern air defenses.

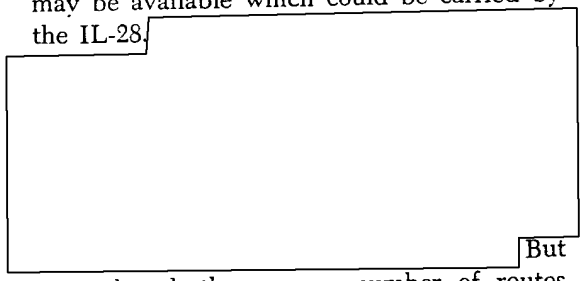
92. The Chinese apparently intend to use the TU-16 force as an integral part of a regional strategic delivery capability which will include MRBMs and IRBMs. In view of the size of the Chinese investment in the TU-16 program we believe that a sustained production run is planned. If a production schedule of some 2 to 3 aircraft a month were continued through the mid-1970s, the force would consist of some 150 to 225 aircraft by mid-1976. (Detailed force projections are presented in Section VI.)

93. The Chinese could now have both fission and fusion bombs of a size and weight suitable for TU-16 delivery now in stockpile (see Section I).

B. Light Bomber Force

94. The USSR provided about 300 IL-28 Beagle jet light bombers to China in the 1950s. The Chinese maintained the size of this force with an extensive overhaul program through the 1960s, and there is evidence they began limited production of IL-28s in 1969, indicating that they intend to keep this aircraft in service. They have dispersed and relocated IL-28 units many times, and there are now over 80 airfields in China from which the force can operate.

95. We do not know whether the Chinese intend to use IL-28s to deliver nuclear weapons. The bomber variant of the IL-28 has a maximum combat radius of only about 570 n.m., but in a strategic role the aircraft could be used to strike some targets around the periphery of China. The IL-28 could also be used for tactical battlefield delivery of nuclear weapons.

96. A fission weapon or even a TN weapon may be available which could be carried by the IL-28.  But even though there are a number of routes that the Chinese could follow to produce a nuclear weapon for the light bomber force, there is no evidence that they have stockpiled or are developing one.

97. There is no evidence that the Chinese presently have any intention of employing the light bomber force in a strategic attack role. Training of IL-28 crews has consistently

emphasized conventional tactics in exercises involving ground support or attack against surface ships and submarines. Over the years the IL-28 force has been deployed in a pattern we think suitable primarily for defense of the mainland, and this pattern has not changed recently.

C. Future Bombers

98. There is no evidence that the Chinese are developing any new bombers. But their success in copying the Mig-21 and developing the native designed fighters and their progress in the strategic missile program suggest that they have the capability to undertake a program to design and produce a more advanced bomber. Given the technical problems involved, however, such as fabrication of engines and airframes using exotic metals or alloys, the Chinese probably could not have such a bomber operational before the end of the 1970s.

IV. BALLISTIC MISSILE SUBMARINE SYSTEMS

A. Background

99. In the Sino-Soviet technical assistance agreements of 1957 and 1958, the USSR apparently agreed to help the Chinese establish a program to build Soviet ballistic missile submarines and to equip them with a short-range liquid-propellant missile. Proceeding on their own after 1960, the Chinese launched a missile submarine in 1964 at the Luta Shipyard in Dairen, probably using Soviet plans and at least some components supplied before the break. The design is that of the original Soviet G-class, which has three missile tubes for launching the SS-N-4 missile from a surfaced position and torpedo tubes for conventional attack. It is diesel-powered and has a patrol radius of 3,000 n.m. with 10 days on station.

100. The Chinese probably intended to equip their G-class submarine with the SS-N-4, a single-stage ballistic missile using storable-liquid propellants and with a range of about 300 n.m., but we do not know what assistance the Soviets planned or actually provided prior to the split. The Soviets may have given the Chinese some technical data on the SS-N-4, but there is no evidence that any missiles were provided.

101. Before 1960 the Soviets apparently also assisted the Chinese in starting construction of facilities which appeared suitable for basing, overhaul, and construction of missile submarines. In 1962 these facilities were in the initial stages of construction with activity either low or suspended, suggesting that little or no progress had been made after the Sino-Soviet break.

Limited Chinese Progress, 1962-1968

102. The Chinese continued to show interest in a ballistic missile submarine program from 1962 to 1968, but the pace of the program was slow and activity was sporadic. The G-class submarine which had been launched in 1964 became operational in 1965 but had no missiles, and it carried out only occasional routine operations, never moving far from home port. It entered the Lu-shun Shipyard near Dairen for extensive refit in the fall of 1968.

103. To some extent this inactivity may have reflected a lack of resources resulting from the economic collapse that followed the Great Leap Forward. Priority may have been assigned to the CSS-1 and CSS-2 programs which were in the development and flight test stages in the early and mid-1960s. But the evidence also suggests that the Chinese had second thoughts about a submarine program based on the G-class and SS-N-4 missile. That the Chinese did not construct additional G-class submarines or begin sea tests of a missile similar to the SS-N-4 strongly suggests

that neither will be produced or deployed. They may have decided that such a system was hardly worth the cost and that they should defer construction until they could design something better.

104. The Chinese had begun R&D on marine nuclear propulsion systems by the early 1960s, and possibly as far back as the late 1950s. The Director of the Shanghai Ship Research Institute has written articles on the subject, and this Institute has probably been the locus since then on the major R&D effort in marine propulsion. According to a press report, Premier Chou En-lai stated while visiting Rangoon in April 1960 that "China expects to build atomic submarines within five years".

105 [redacted]. The Chinese made substantial efforts in the 1960s to acquire equipment and hardware from other countries that could be used in nuclear research and missile development for submarine programs. They had success in obtaining items such as vibration test units, canned rotor pumps, high strength steel plates, and special stainless steel tubing.

B. Recent Developments

106. There is no unequivocal evidence that China has embarked on an active program to obtain an SLBM capability. But recent evidence, largely circumstantial, suggests that China intends to pursue development of such a capability, albeit different from the original concept founded on the prospect of continuing Soviet aid.

107. Beginning in late 1968, the missile tube area of the G-class submarine was extensively modified. This work suggests strongly that the Chinese are preparing the submarine for use as a test platform in developing a new missile of native design. In this connection it is worth noting that the G-class is well adapted for use as a test bed because of the ample space available in the missile launch area.

108. We now have evidence that the Chinese have built a large new submarine. Designated the Mao-class by US intelligence, it is a torpedo attack submarine of indigenous design with a hull specially suited for high speed submerged operation. The appearance and configuration of the hull suggest that it may be nuclear powered. If it is nuclear powered, the Chinese have taken a big step toward a nuclear-powered missile submarine. Even if it is diesel-powered the design demonstrates new Chinese capabilities applicable to development of modern nuclear-powered missile submarines. Furthermore, there is evidence that China has developed—or is developing—modern and sophisticated shipbuilding facilities to support adequately a nuclear submarine construction program.

C. China's Options

The Submarine

109. We have few clues indicating when a Chinese ballistic missile submarine might become operational or what its characteristics might be. The approach taken will not become apparent until an active submarine construction program or a missile test program for such a system can be detected and studied.

110. If, as seems apparent, the Chinese do not intend to produce an interim system consisting of the G-class submarine and the SS-N-4 type missile, there are two other options open to them. They could elect to deploy a transitional system consisting of an improved missile and more advanced submarine (but with diesel rather than nuclear power for the first

few units). The first submarine for such a system might be complete as early as 1975. This approach would ease the transition to nuclear power by testing the suitability of a new hull design while the nuclear power plant was being developed.

111. The Chinese are unlikely to choose this alternative if they already are well along in the development of a nuclear propulsion plant for submarines. In this event, they would be likely to concentrate on developing a nuclear-powered submarine carrying, say, 16 missiles. The keel of the first submarine of this type could have been laid by mid-1971 and we estimate that the Chinese could have the first unit complete as early as 1976. If the Chinese do not yet have a nuclear reactor for a submarine, the earliest completion date for a SSBN would be a year or two later.

Prospects for a Submarine Missile

112. *Liquid-propellant missile.* There is no evidence that a liquid-propellant missile for submarines has been under development, but the Chinese have adequate facilities and could have begun the early stages of land-based testing. We think it unlikely, however, that an entire land-based flight test program, which would require a year or so for completion, could go undetected. Pop-up tests of a dummy missile might go undetected, but live firings from the G-class submarine or from any new submarine would soon become evident. Seaborne test firings probably would take at least two years. Even if a liquid-propellant missile is now ready for land-based flight testing, we think the earliest it could be available for test firings from a submarine is late 1974.

113. *Solid-propellant missile.* A submarine missile employing solid propellants would be easier to handle and store than one using liquid propellants. If the Chinese chose this route, they might be ready to begin flight testing of a solid-propellant missile within the next year or so. A flight test program could take at least three or four years and would follow essentially the one outlined for liquid-propellant submarine missiles, although the land-based portion could take somewhat longer because of Chinese inexperience in firing solid-propellant missiles. Thus, a solid-propellant submarine missile might be ready for test firings from a submarine as early as 1975.

Possible Initial Operational Capabilities For Chinese Ballistic Missile Submarines

114. Once a submarine is complete and a fully tested missile is available, we calculate that a minimum of six months is necessary, at least for the first unit in the particular class, for testing the integrated system and achieving readiness for operations. Thus, in the options discussed above the system based on a more advanced diesel-powered submarine and an improved missile could be operational as early as mid-1975. If the Chinese go directly to an SSBN system employing either a liquid- or solid-propellant missile, it could be operational as early as mid-1976.

115. These estimates of the IOC dates for various types of ballistic missile submarines are consistent with the evidence at hand of Chinese capabilities in submarine construction and missile development. These estimates go beyond the evidence, however, in assuming that the Chinese are going forward with the development of essential skills and equipment. For example, Chinese submarines seldom operate outside of local fleet areas. To be ready to operate a viable ballistic missile submarine force by the mid-1970s the Chinese will have to start soon to train crews in long duration, open ocean patrols.

116. In addition, a ballistic missile submarine force requires a precision navigation

system of some sort. Bathymetric and gravimetric surveys or navigation satellites could provide the basis for such a system, but we have no evidence yet that China has undertaken or has plans for any of these activities. The lack of evidence of these sorts of activities may indicate that the deployment of ballistic missile submarines beginning in 1975 or 1976 would require a crash effort.

117. They would also face the difficult problem of melding submarine, missile, and nuclear warhead into an effective weapon system. The Chinese will face new operational problems in maintaining missiles aboard a submarine and in adapting to a new type of launch platform. In short, the inherent difficulties of ballistic missile submarine operations will be of a different sort than the Chinese have faced before. They may have used their one G-class unit for some initial systems planning and experimentation, but there would still be specific problems connected with any type of new submarine they built. Although we cannot predict whether there are problems they might not readily solve or what bottlenecks might develop, there is a good chance that the first nuclear-powered ballistic missile submarine will not become operational until after the period of this Estimate.

V. CHINA'S NASCENT SPACE PROGRAM

118. Communist China launched its space program by orbiting a satellite on 24 April 1970, several years after we expected them to make the attempt. We had estimated that the Chinese could make an initial attempt using the CSS-1 booster any time after about 1967, and we do not know why the program did not begin until 1970. The Chinese may have decided to wait until they had a space booster (an adaption of the CSS-2) that had the capability and growth potential to be used for a variety of missions in the future.

119. The first satellite—which according to the Chinese weighed 381 pounds—broadcast the Maoist melody "The East is Red", and the way the event was treated in the Chinese press indicates the strong propaganda importance Peking attached to the event.

120. The initial space success was followed within 11 months by a second satellite launch (on 3 March 1971). this payload, announced as weighing 486 pounds, was also successfully orbited,

Satellite Launch Vehicle

122. Analysis of the available evidence pertaining to China's first two space events indicates the same type of satellite launch vehicle (SLV) was employed in both instances. The energy required to insert the payload weights announced by the Chinese—the validity of which we have no reason to doubt—into the orbits actually achieved clearly was greater than that inherent in a vehicle based on the CSS-1 MRBM. Thus, the Chinese apparently elected to forego the opportunity of orbiting their first satellite at a relatively early date in favor of developing a more capable and versatile system. After reviewing all the information bearing on this program, we believe the Chinese were successful in using the CSS-2 IRBM effort as the springboard for development of their initial SLV. Indeed, we think a fairly convincing case can be made for the existence of a relatively close technological relationship among the programs involving the CSS-2, Ching-yu missile and space launcher.

123. The observation of a small spent upper stage in orbit with both satellites [redacted] indicates the first Chinese SLV is a three-stage system. Although many uncertainties remain concerning the precise technical characteristics of the CSS-2—e.g., the specific type of storable-liquid propellants used—it appears to be more than adequate to satisfy the first-stage energy requirement associated with the two satellite launches. We think, therefore, that the booster stage of this Chinese SLV is closely related to the CSS-2 IRBM and probably is a modified version of that vehicle.

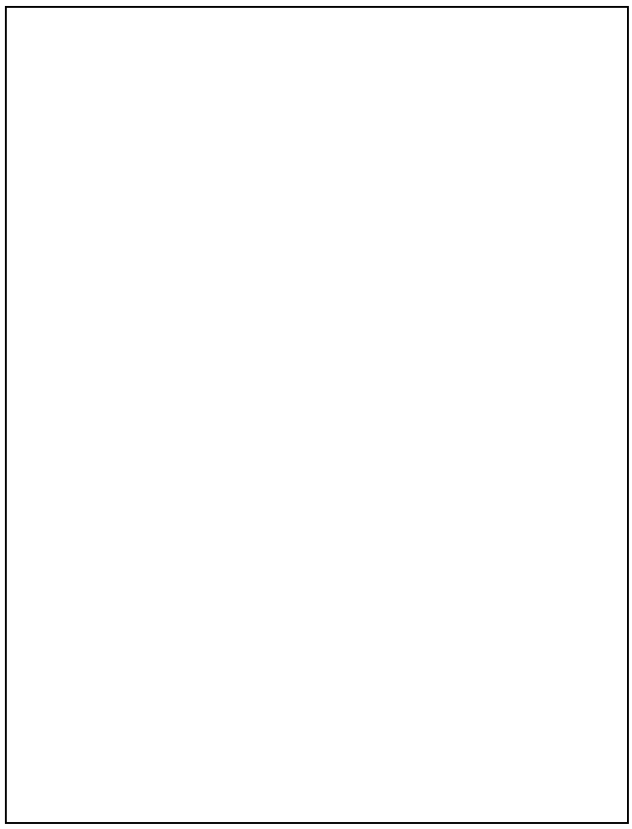
124. As we noted in the discussion of China's ICBM program in Section II, it is our on-balance judgment that the CSS-2 has also served as the basis for the development of a ballistic missile now being flight tested from the Ching-yu complex. There is a reasonably good chance that the second stage of this latter system comprises the second stage of the SLV, at least in some modified form. A developmental philosophy such as this would take maximum advantage of China's relatively scarce supply of aerospace resources and follow a pattern which is quite common in both the US and Soviet missile and space programs.

[redacted]

126. Based on the energy required to place the first two satellites in orbit, we can say that this system should be capable of injecting a payload weighing roughly 1,300 pounds into a low earth orbit of some 100 n.m. It is conceivable, however, that the Chinese have as yet not fully utilized the maximum capability of the vehicle, which could be to place as much as 2,000 pounds in a low orbit. We should be able to refine our estimate of this vehicle from future launches. We expect the Chinese will continue to employ the system since it appears to have the potential for certain useful missions, including scientific and development testing, and its capability could be increased through the use of various upper stage combinations.

Satellite Missions

[redacted]

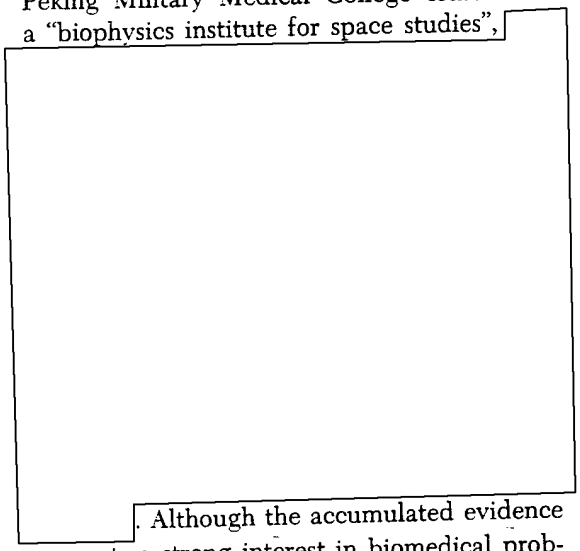


Program Prospects

129. We think these first two satellite launches are only the initial phase of a serious Chinese commitment to an ambitious space program during this decade. China's space program has probably been closely tied to and dependent upon progress in the development of strategic missiles, related hardware, and facilities as typified by the probable use of the CSS-2 IRBM as the basis of China's first satellite launcher. Although certain aspects of the space program during the next few years may have some purely scientific applications, we believe that military requirements probably will dominate it for the foreseeable future. One urgent military need is targeting and geodetic data in support of the strategic missile forces. Another is a reconnaissance capability for intelligence purposes. We think the Chinese could acquire a capability in these areas by the mid-1970s.

Prospects for a Manned Space Effort

130. The Chinese have demonstrated an interest in the biomedical aspects of high performance aircraft and space flight since about 1959, when an Institute of Aviation Medicine was established in Peking by the Peoples Liberation Army (PLA). An experimental laboratory with a low pressure chamber was set up at the same time. In 1960 or 1961 the Peking Military Medical College established a "biophysics institute for space studies",



. Although the accumulated evidence suggests a strong interest in biomedical problems of high performance aircraft and space flight, there is no evidence for the existence of an on-going program specifically for space medicine in support of a manned space program.

131. We believe the Chinese have the technical capability to prepare and monitor biological experiments in an orbiting spacecraft, and that they would be interested in doing so. There is no indication at this time that any capability exists for placing a man in orbit, but we believe that in time they could mount such a program.

VI. PROJECTED STRATEGIC FORCES

A. Introduction

132. Projecting the size, composition, and capabilities of Communist China's strategic attack forces is a particularly troublesome task even over the near term and becomes extremely difficult for the mid-1970s.

133. We know most about China's force of TU-16 jet medium bombers—their technical characteristics, production rate, numbers, and location and something about their training. Even here there are uncertainties such as when the Chinese will produce a tanker version, what percentage of the force will be equipped with nuclear weapons, where operational units will be based, what their targets and tactics will be, and whether the Chinese will develop an ASM to provide a standoff capability.

134. In the case of missiles, we start with an uncertain baseline. We believe that the Chinese have deployed the CSS-1 in small numbers, but we have not identified deployed units and can only estimate their numbers, mode of deployment, state of readiness, and strategic dispositions. We believe the CSS-2 has reached (or soon will reach) the end of its flight test phase and that units are being trained, but we have not identified operational sites under construction and the IOC of the system is uncertain.

135. Our uncertainty increases sharply when we look at missile systems just entering or possibly approaching the flight test phase. The missile system tested from Chingyu probably is designed as part of a regional force directed against Soviet and Asian targets but it may have some capability against the continental US.

[redacted]

[redacted]

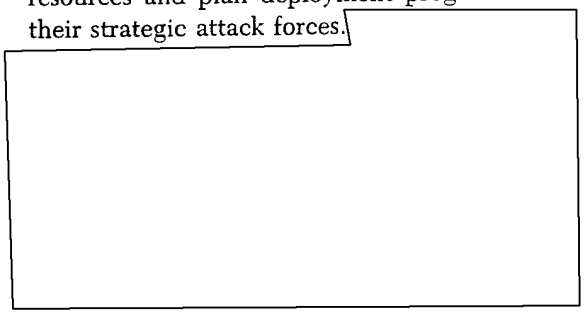
138. Our uncertainties become more complex when we undertake projections of the rate of deployment of any of the strategic attack systems we believe the Chinese are developing and, more importantly, projections of the mix of delivery systems which will comprise the force. We have no idea what mix of forces the Chinese will choose, and in some cases the Chinese may not have taken a decision yet themselves. For example, when CSS-2 deployment begins we do not know whether the Chinese will continue to deploy the CSS-1, maintain the existing force, or retire the deployed units. We do not know what the mix will be of hard and soft sites,

or permanent and field sites. And if the missile tested at Ching-yu is deployed, we do not know what impact that will have on the force mix because we do not know its capabilities.

139. And we have no experience to go on. We have watched closely while the Soviets tested and deployed about 10 land-based strategic missile systems, about a half-dozen submarine missile systems, and several strategic bombers as well as a variety of other military systems. Even so, when looking at new Soviet programs we can project with only fair confidence how fast they are likely to move—or can move—based on past programs. In China, we have not been able to follow and measure strategic missile deployment at all, we have seen only one strategic bomber program unfold for a couple of years, and China's one submarine missile program provides few clues. In short, we have not seen the Communist Chinese in action and have little feel for how production and deployment constraints interacting with strategic concepts will be manifested in the physical reality of a deployed strategic attack force.

B. Strategic Concepts

140. Chinese strategic concepts will provide the context within which they will allocate resources and plan deployment programs for their strategic attack forces.



Capabilities

141. The strategic attack programs the Chinese are known to have underway are clearly directed at development of a regional nuclear attack capability in Asia: the TU-16 medium bombers; the CSS-1; and the CSS-2. The CSS-1 could provide coverage of significant portions of all of China's Asian neighbors and most US bases in the Far East, but coverage of the USSR is limited to the border regions and the Soviet Far East. The TU-16 and the CSS-2 would extend coverage of Asia to include most of Indonesia and India, but their major importance is in sharply increasing coverage of the USSR as far west as the Ural region.[5]

142. We doubt that the Chinese will be content with a regional nuclear capability, and China's ultimate objectives in building a nuclear force in this decade are probably founded on a desire to enhance its position as a world power. Continuing development of China's nuclear, missile, and space capabilities will elevate China's status as a scientific, technological, and military power in the eyes of most of the world, and such status could provide substantial leverage for China's political offensives in the underdeveloped world.

143. The size of China's continuing investment in the production of nuclear weapons and development and deployment of delivery systems indicates that Peking plans more than a token force for prestige or status, however. It is not content merely to have become "a member of the club". At the other end of the spectrum, the achievement of anything approaching parity with the US or USSR lies, at best, in the distant future and the most the Chinese can hope to achieve over the next decade is some degree of deterrence against

[5] The Chinese will have no realistic nuclear threat against Moscow until they deploy a missile with longer range than is estimated for the CSS-1 or CSS-2, perhaps the missile being developed at Ching-yu. The TU-16 has the theoretical range to reach Moscow if refueled or sent on a one-way mission, but would face 2,000 n.m. of heavy Soviet air defenses en route.

the two superpowers. But although China's strategic weapons force will remain small compared with US and Soviet forces through this decade, it will be overwhelming in relation to the capabilities of its Asian neighbors.

Requirements

144. The Chinese regard the US as a major threat and almost certainly see a requirement to deter the US directly. Peking probably calculates that if the US were to overcome all its other inhibitions in deciding to launch a first strike on China, it would not be deterred by the possibility that the Chinese might strike back at one of our Asian allies. The Chinese probably believe that a capability to deliver nuclear strikes against the continental US would also enhance China's standing as a world power and provide greater freedom of action in Asia than the regional force already does.

145. China's distance from the US makes achieving a credible deterrent against us difficult, however, and would require ICBMs or ballistic missile submarines capable of hitting the US homeland. In the meantime, the Chinese count heavily on the existing inhibitions against the use of nuclear weapons, including the weight of world opinion, to deter the US and the USSR from attacking them with these weapons.

146. Of their two potential major antagonists, the USSR is probably of greatest immediate concern to China. The continuing military buildup on both sides of the border and the harsh polemics from Moscow and Peking over the past several years indicate that differences in ideology and competition for leadership are so strong that relations between China and the Soviet Union probably will remain cool at best. The era of comradely assistance of the 1950s is not likely to be repeated, at least for the near future. In this political climate, the Chinese are apt to view the Soviet Union rather than the US or any Asian country as their primary antagonist. The geographic proximity and military power of the Soviet Union also will influence the Chinese in their assessment of the threat.

147. For China, the grave implication of the USSR's strategic superiority is that any Soviet full-scale nuclear strike, whether preemptive or retaliatory, would result in massive damage and enormous casualties in China. And without a nuclear capability China has little influence on whether a conflict would be conventional or would escalate to nuclear attacks.

148. China is now in a critical transition phase in which probably a few MRBMs are deployed and the TU-16 force is relatively small. We think the Chinese will attempt to pass through this phase by minimizing the chances that the USSR can detect, target, and destroy their forces. We think the Chinese are deploying the MRBM in concealed sites or base areas, using sites with few distinguishing characteristics, or moving units among field sites. When the IRBM is deployed the Chinese may adopt one of these same strategies, at least initially.

149. The credibility of such a concealed force as a deterrent against the Soviets would depend upon the Soviets' being convinced that the force actually exists. Although the Soviets are geographically in a better position than we are to collect intelligence on the Chinese program, it would not be surprising if the Soviets have made a "worst-case" estimate of present Chinese capabilities that is considerably higher than our estimate.

150. The Chinese may consider even a relatively small nuclear force sufficient to keep a confrontation with the Soviet Union on a conventional level. Even now the leaders in Moscow must be in doubt as to what sort of

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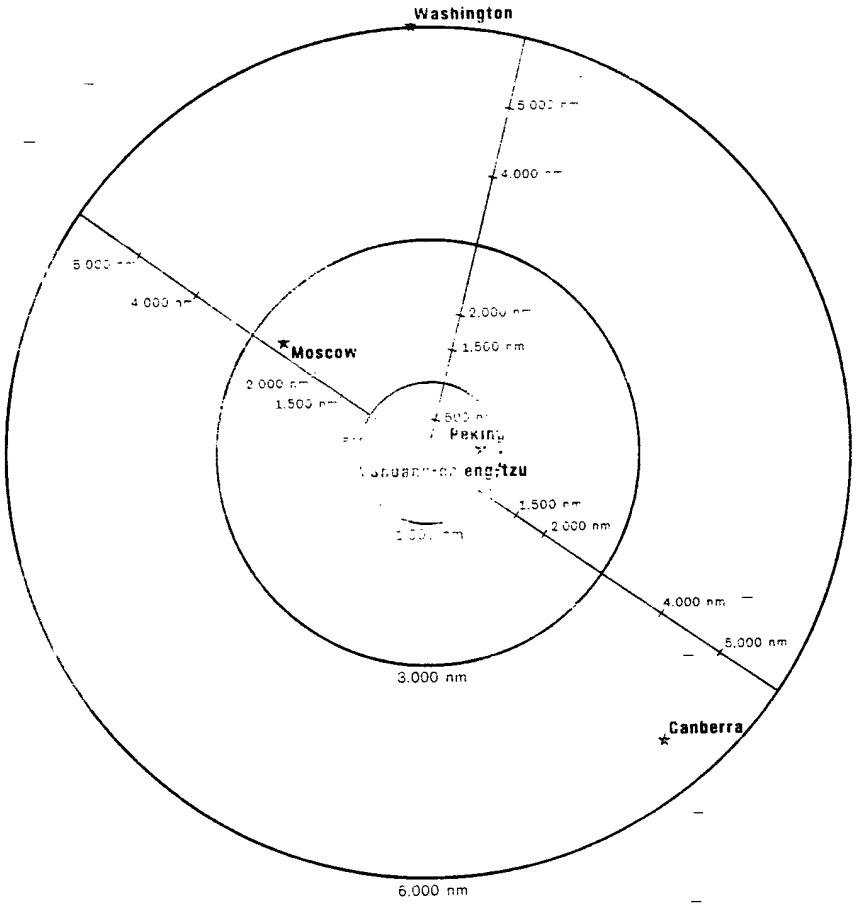
FIGURE 1.

Ranges from Shuang-ch'eng-tzu



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attack they could launch that would guarantee no surviving Chinese capability to deliver at least one [redacted] weapon on a nearby target such as Vladivostok or Khabarovsk. The Chinese may calculate that they have already achieved a first small measure of deterrence against the Soviets.

151. Other military threats to China in Asia are limited. India lacks both missiles and nuclear weapons and its relatively large conventional forces pose little threat to China. Japan's economic capacity and military potential demand the attention of Chinese leaders in their planning for nuclear forces more than any other nation in Asia except for the Soviet Union. Should the Japanese veer from their present course of political pacifism and their defensive military outlook, they could confront China with a nuclear threat within about 5 to 7 years after the decision to pursue such a program. Thus, China's nuclear forces in the 1970s could be heavily influenced by developments in Japan.

Doctrine for Use

152. When the Chinese leaders decided some time in the mid-1950s to embark on a program to develop and produce nuclear weapons and strategic missile delivery systems, they may have had no very clear idea of just how they would employ these systems. They may not have developed much doctrine beyond the conviction that the possession of such weapons was essential if China were to join the ranks of the leading military powers. We have no way of knowing and, in any case, the subsequent break with the Soviets introduced a major change into whatever strategic equation they were developing.

153. The only thing the Chinese have since said about their nuclear doctrine is that they have a firm no-first-use policy. In the light of the overwhelming nuclear superiority of the US and USSR, this is probably a realistic statement of intent. And we think it highly unlikely that Chinese doctrine provides for initiating the use of nuclear weapons against its Asian neighbors. Considering China's superior strength in conventional forces, nuclear strikes against its Asian neighbors would seem unnecessary, would entail great political costs, and would risk retaliation from one of the superpowers. Initiating a nuclear attack on the US or the USSR would invite the elimination of China as an industrial and military power.

154. We also think it unlikely that Peking would make any crude, direct use of nuclear blackmail against its non-nuclear neighbors. To do so would be against its policy as announced and practiced up to now. Furthermore, such a maneuver would be complicated and perhaps even dangerous because of possible reactions by the USSR or the US in providing a nuclear umbrella for the non-nuclear powers. Nevertheless, in any confrontation between China and an Asian neighbor, China's nuclear weapons capability would be in the consciousness of the other party and might have some effect on the outcome.

155. We do no know how the Chinese would proceed should deterrence fail. They presently lack systems which would warn them that strategic missiles had been launched against them (and any such system could provide only a few minutes warning against a Soviet attack). For this reason, the Chinese cannot launch on warning but would have to absorb a strategic nuclear attack before responding. Their national command and control systems will have to be devised with this in mind, but we have no evidence of the kind of procedures and systems the Chinese will utilize. We assume—but have no evidence—that the Chinese will take stringent precautions against accidental or unauthorized launches of missiles or bomber strikes.

C. Constraints on Future Forces

156. Over the past decade the Chinese Communists have undertaken a wide variety of programs to develop and produce strategic attack systems with nuclear warheads. They are now moving into a period of deployment which will involve new problems and costs. They will still need to maintain an R&D effort looking to improved or more advanced systems. This Section discusses a variety of possible constraints on deployment of strategic forces: the competition for resources, the scientific and technical base available to Chinese science and industry, the production capacity for nuclear warheads and delivery systems, and China's ability to train missile units and construct launch sites.

The Competition for Resources

157. The human and material resources demanded by advanced weapons programs are scarce and expensive in any country, but especially so in China where the scientific and industrial bases were extremely small prior to the Communist takeover. The Chinese have demonstrated their willingness to invest scarce resources heavily and continuously in strategic weapon programs. While we cannot quantify the cost of their effort, it is obvious that they have utilized a large portion of their scientific and technical manpower, advanced instruments and machinery, skilled labor, and construction and transportation resources. At the same time they have been generally successful in insulating their advanced weapons program from the political and economic upheavals of the last decade.

158. The demand in China for scarce, high-quality resources has not been limited to the advanced weapons program, however. The Chinese have been simultaneously making heavy expenditures of resources to equip their conventional forces, expand their industrial base, and increase agricultural output. All of these efforts will continue far beyond the period of this estimate, and whatever the priority accorded strategic attack forces there will be other important claimants for the resources China has available.

159. We have little knowledge as to how decisions are made in Peking with respect to all the key issues involving the strategic weapons program including the establishment of priorities for allocating scarce national resources as between individual weapon systems and between defense industries as a group and basic economic development. Mao Tse-tung probably exercises a final authority in all these matters and the powerful Military Affairs Commission plays a key role. But despite the monolithic appearance, there are no doubt differences of views within the military services and between some military elements and the state bureaucracy responsible for economic planning and development. Vested interests in particular programs probably exist within the various Research Institutes and special ministries involved. And the large issues of resource allocation and national strategy are prime candidates for exploitation in the political maneuvering and in-fighting that has gone on within the facade of party unity ever since 1949, coming into the open in times of stress as during the Cultural Revolution.

161. There is little doubt that the Chinese will continue to accord a high priority to strategic weapon programs, especially now that deployed forces are coming into being. Nonetheless, the Chinese will deploy their forces more slowly and deliberately than the maximum rate possible with an all-out physical

and technical effort because they will want to achieve their strategic goals without crippling other vital efforts.

162. We think the strategic forces projected in this Section are within China's technical and industrial capabilities to produce and deploy. The Chinese could do more, but we do not know how much. The most we can say now is that an effort in the strategic field significantly above that postulated here would cut into other programs—modernization of conventional forces (particularly in the face of the growing Soviet threat), overall industrial development, and feeding the huge and growing population—which will remain important enough in Chinese eyes that they will claim some of the resources which could be devoted to strategic weapons.

Other Constraints

163. We have examined a variety of possible constraints on China's strategic forces which Chinese planners are likely to confront during the period of this estimate, including technological and industrial factors, availability of nuclear weapons, and production capabilities in such fields as liquid and solid missiles, aircraft and submarines. The analyses of these factors did not lead to any conclusion which could be used to quantify limits on Chinese programs.

164. The balance among resource claimants may shift, of course, with changing military and political relationships in Asia, and the Chinese will continue to have hard choices to make. Should the threat of major conflict with the Soviets increase sharply, for example, we would expect to see greater efforts in support of both strategic and conventional forces at the expense of industrial and agricultural development. We think the Chinese have been engaged in developing strategic weapons long enough to take the realistic view toward strategic forces as but one element of national power and prestige. While they will probably accept the drain on other efforts imposed by their ambitious programs for strategic attack forces they are unlikely to allow this drain to become so heavy that other equally important national programs will be seriously damaged.

D. Deployment Through Mid-1972

Medium-Range Ballistic Missiles

165. As indicated in Section II, we believe the Chinese began to deploy CSS-1 MRBM units in 1969 or 1970. We estimate that there could have been about 10 MRBMs deployed by mid-1971

166.

e. Whatever the exact size of the present CSS-1 force, it is likely that the ultimate force will be a relatively small one because of the operational and logistical limitations of the system when compared with the IRBM, which appears nearly ready for deployment. In addition, because it is limited in range, the MRBM could reach and destroy fewer targets that would justify expending a nuclear weapon.

167. The MRBM has other major operational shortcomings compared with the IRBM. If, as we believe, the MRBM uses a non-storable oxidizer, it has a longer reaction time and shorter hold time at a high state of readiness. It could be held for launch at a high state of readiness for only a few hours and possibly as little as one hour. The IRBM on the other hand probably could be erected, fueled, and held ready for an indefinite period, then launched on relatively short notice—15 to 30 minutes. Neither missile could be transported or erected while filled with propellants.

168. If—as we estimate—the CSS-2 reaches IOC during the coming year, the Chinese will probably not make a large investment of resources in the CSS-1. In fact, it seems likely that deployment of CSS-1 units will cease once the CSS-2 deployment program is well under way. On a conservative basis, CSS-1 deployment might level off at about 15 launchers by mid-1972, but it could be double that number and deployment might continue into 1973. Most of the CSS-1s will probably be deployed within range of Soviet targets.

Intermediate-Range Ballistic Missiles

169. *Deployment Timing.* As already noted, it is possible that IOC for the CSS-2 is at hand and—barring unusual problems or a Chinese decision to delay deployment—almost certainly will be reached sometime in 1972. We believe that flight testing of the CSS-2 has probably been basically completed. The period between completion of training and deployment will probably be brief so that the unit retains its proficiency, and once a missile unit has conducted a training firing we expect it to deploy to an operational site. In Soviet practice, initial training launches by SS-9 and SS-11 crews preceded site activation by three to six months, but later training firings were conducted much closer to the activation of a launch group.

170. We estimate that the first fixed soft sites would take about a year to build (depending on how hard the Chinese push), with some subsequent reduction as the construction crews gain experience. Construction of soft sites could have begun last year with completion set for this summer or fall. If construction has not yet started, it would be 1972 before the first units are deployed.

171. *Mode of Deployment.* Initial deployment of the CSS-2 will probably be in a soft mode. Silo deployment may come later but we have not identified any prototype silo for this missile.

172. The Chinese have several options in undertaking soft site deployment of the CSS-2. They could elect fixed soft sites with elaborate permanent support facilities; they could deploy at fixed soft sites with few distinctive characteristics; or they could attempt to conceal all or part of the initial force.

173. Concealment might be achieved by placing some IRBMs in caves, tunnels, or storage buildings, with nearby launch pads being camouflaged. During crisis periods, however, if the Chinese wanted to keep their missiles on alert they would have to expose them. If the missiles were kept concealed until placed on alert the reaction times would be about three hours for erecting, fueling, and aiming the missile.

174. The Chinese may decide that total concealment of part or all of their CSS-2 missile force is not practical. Even so there is a good chance they will build sites with few distinguishing characteristics or will attempt to make the sites inconspicuous rather than constructing elaborate soft sites like those the Soviets built for their first strategic missile systems.

175. *Force Levels.* We must allow for the possibility that the CSS-2 has reached IOC in a soft or concealed mode in which case 1 to 5 launchers could now be operational. In any event, we estimate that the CSS-2 force could reach 5 to 15 launchers by mid-1972.

Strategic Bombers

176. By mid-1971 the Chinese had produced about 40 TU-16 Badger jet medium bombers. At the present rate of production the total should be up to 65 to 75 by mid-1972. We do not know how many bomber crews the Chinese have trained, but by mid-1972 they

should have 2 or 3 regiments, of about 15 aircraft each, whose crews are "ready" for complicated missions against modern air defenses.

177. We know little about the training the Chinese have conducted. Thus, we can say nothing concrete about the tactics the Chinese intend to employ with the TU-16, the intensity of training, and the degree of proficiency attained.

178. Another major problem in our understanding of the capabilities of the TU-16 bomber force is the concept of nuclear weapons logistics the Chinese will adopt. It is too early to know whether the Chinese will stockpile nuclear bombs at each of the medium bomber airfields or keep them at some central location for delivery or pickup in a crisis (see Section I.C).

179. There are a variety of uses to which the TU-16s could be put. In addition to a strategic nuclear strike role, the Chinese may use some of the aircraft for long-range naval strike and reconnaissance missions, tactical or strategic reconnaissance of ground forces, electronic countermeasures (ECM), and ASW. Even in the strategic strike force the Chinese may use some aircraft primarily as tankers or to provide ECM support to the weapon carriers. We think, however, that at least during the period of this estimate the bulk of the TU-16 force will be assigned a strategic strike mission. And however the Chinese deploy, arm, and employ their TU-16s, it is clear that over the next several years these aircraft will comprise the majority of the delivery vehicles available to the Chinese.

E. Projecting Chinese Communist Weapon Systems To Mid-1976

[redacted]

[redacted]

CSS-1 Medium-Range Ballistic Missiles

181. We do not know how long the Chinese will keep their small CSS-1 force in the field after deployment of the CSS-2 begins. They might begin to phase it out in 1974 or 1975, as substantial numbers of CSS-2s are in the field. On the other hand, in the light of China's demonstrated propensity for retaining even obsolete equipment, we think there is some possibility that the CSS-1 will stay in the force well beyond the period of this Estimate.

CSS-2 Intermediate-Range Ballistic Missile

182. Because the CSS-2 has many advantages over the CSS-1, it is likely to be deployed in much greater numbers and remain in the field for a longer time. The use of storable-liquid propellants substantially improves reaction time and it probably is a relatively reliable vehicle. If the CSS-2 can in fact deliver a TN warhead to about 1,400 n.m., this system could fill a major part of China's requirement for a regional capability.

183. If the primary function of China's advanced weapons program is to establish a deterrent, the missiles would be targeted against value targets, mainly population centers. From

reasonable distances back from China's borders (considering such factors as security, transportation, and terrain), the CSS-2 could reach about 40 Soviet cities with a population of 100,000 or more. This would include all the cities along the Trans-Siberian Railroad from Vladivostok westward to Sverdlovsk. All Soviet military installations along the Chinese border would also be in range, of course,

184. During the time that the Chinese have no significant capability against the continental US, they may try to establish a deterrent by targeting US bases in the Far East and the major cities of US allies in the area, particularly in Japan. This could add between 40 and 50 additional targets, depending on the criteria for selection. India, a major Asian rival, has 16 more cities of 100,000 or more population which could be targeted by the CSS-2.

185. Altogether, this makes about 100 significant targets within range of the CSS-2. There is no way of knowing how many of these targets the Chinese might choose to cover. Ultimately they might wish to provide redundant coverage for these targets. This could require several hundred 1,400 n.m. missiles. A force of this size probably could not be achieved until well beyond the period of this Estimate. We suggest it only to give some idea of an upper limit. By 1976 CSS-2 deployment might even have given way to a follow-on system.

186. As indicated in preceding sections, we believe that initial deployment of the CSS-2 will be in a soft mode. But concern for survival of the missile force may lead to later deployment in silos. Barring unexpected problems, we think only a few silo launches of the CSS-2 would be needed to test its compatibility with a silo. There are, however, many uncertainties in our judgments about the nature, timing, and scope of the first deployment in silos.

187. If the Chinese elect to take some shortcuts—and are successful—silo deployment could begin at any time and the first hardened sites could be operational sometime after mid-1973. If the Chinese choose a more deliberate approach, however, IOC would be later.

188. In any event, we think the Chinese will halt soft-site deployment if silo deployment begins. They will probably retain in the force the existing soft sites because of doubts that a hardened missile force would survive a nuclear attack if the number of sites is small.

189. Deployment in silos of 10 to 20 IRBMs a year is within Chinese capabilities for site construction and probably would place no undue strain on their capacity to produce missiles or warheads. Training sufficient crews also would seem to present no insurmountable problems. We believe that if deployment in silos begins in 1973 or 1974, the Chinese could field a force of 20 to 60 CSS-2 IRBM silos by mid-1976 in addition to 20 to 40 soft sites. This force would be a size capable of striking most of the important targets that lie within IRBM range. The size of the force might turn out to be considerably larger if lighter warheads become available thus permitting the missile to reach more targets. Retaining and improving missiles which essentially are sound systems can be as effective as—and considerably cheaper than—developing new systems. Conversely, the advent of a follow-on IRBM system—either solid or liquid—would tend to cause the Chinese to limit the deployment of the CSS-2.

The Ching-yu System

190. As indicated in Section II, there are great uncertainties about the Ching-yu missile. We think that its primary function is to pro-

vide coverage of the USSR and that at most it would have only a marginal capability to reach the US.

191. Since there has only been one detected firing of the missile, and that in November 1970, there is now little basis for estimating an IOC or the rate and extent of deployment. However, if the test program begins soon to move ahead without serious difficulties IOC could occur in late 1973 or early 1974. Deployment would probably be in silos and it would probably be within Chinese capabilities to achieve a force of some 25 to 40 operational missiles by mid-1976 assuming an early 1974 IOC.

Intercontinental Ballistic Missile System

192. It now appears that in September 1971 the Chinese flight tested a vehicle which if used as an ICBM could hit much of the US. The earliest possible IOC for an ICBM based on this vehicle would be late 1974. Because of the technical complexities of the development program, however, IOC would be more likely to occur a year or two later.

193. The uncertainties and unknowns surrounding the postulated Chinese ICBM make any projection of deployment rates even more speculative than is the case with the CSS-2, and the Ching-yu missile. We think, however, that the Chinese could deploy ICBMs in hardened silos at the rate of 5 to 10 per year in the early years of the program.

Solid-Propellant Missiles

194. The Chinese may have already begun static tests of solid-propellant rocket motors. Flight testing of missiles could begin in 1972. Flight testing would probably take a minimum of three years to complete. Thus, a solid-propellant strategic missile might be ready for deployment as early as 1974, but 1975 or 1976 is more likely.

195. We expect the Chinese will first deploy solid-propellant missiles in the MRBM or IRBM class. How well their development programs go for these systems will affect the force structure they have in the mid-1970s. A solid-propellant ICBM will probably not be ready for deployment until toward the end of the decade, even if development is already under way; but the Chinese could surprise us and put a major effort into an ICBM, bypassing deployment of shorter range solid-propellant systems for peripheral attack.

Strategic Bombers

196. We expect the Chinese to produce the TU-16 jet medium bomber at or near the present rate for the period of this Estimate. China's missile forces will still be fairly small by mid-1976, and the TU-16 force will provide a larger number of delivery vehicles, diversification of the threat, and a measure of survivability through mobility and, possibly, airborne alert. In addition, the TU-16 can perform a variety of other missions such as naval reconnaissance, electronic and photographic intelligence, and conventional bombing—all areas in which China's capabilities could stand considerable improvement.

197. We see no evidence of a program to produce a Chinese-designed follow-on bomber, and we think it unlikely the Chinese could build and test a prototype and begin to deploy a new bomber in significant numbers until well after 1976.

Ballistic Missile Submarines

198. We think it possible that a few submarines armed with ballistic missiles could be operational by mid-1976. If the Chinese emphasize a regional capability and decide to produce a diesel-powered submarine carrying strategic missiles, the first one or two units could be in the force by mid-1975.

199. We think it more likely that a ballistic missile submarine would be nuclear-powered in order to have a capability against the US as well as the USSR. If the Chinese have initiated development of a suitable missile and have achieved some measure of success already with a nuclear power plant, the first modern ballistic missile submarine might enter the force by mid-1976, and we have made allowance for this in our force projections. We think it may take longer to field the first of this new class of weapon systems and in any case do not expect many in the force until later in the decade. Section IV contains a fuller discussion of the evidence and reasoning for these judgments.

F. Force Structure, Mid-1973 Through Mid-1976

200. We have used our general understanding of the present status of China's advanced weapon programs and our estimates of the likely future evolution of the individual components of China's strategic forces to project three possible force mixes by mid-1976. The differences between them come from the interplay of technical achievement and strategic decisions. For example, technical success with an ICBM may lead the Chinese to decide to divert resources from other programs to hasten deployment. In other cases, strategic requirements may lead the Chinese to emphasize development of one system at the cost of slower development or curtailed deployment of another.

201. These projections are only illustrative, and we would be surprised if China's forces in mid-1976 correspond in most details to any of them. There are just too many unknowns to predict how the forces will evolve. The projections do provide ways of thinking about somewhat different courses China may take and our best judgments of what the Chinese are likely to accomplish over the next five years.

Case A: The first projection assumes that a regional force will receive most of the emphasis—or at least that the Chinese will not succeed in completing development of an intercontinental capability—and that liquid-propellant missiles will comprise the major elements of the missile forces, with the first solid-propellant missiles entering the force at the end of the period. It seems likely that all CSS-1 missiles will be deployed in soft sites as will the first CSS-2 IRBMs, but we assume that all the missiles deployed in the last two or three years of the period of the Estimate will be in silos.

This projection assumes that the missile tested at Ching-yu would considerably improve China's capability to attack the USSR but would at most provide only a marginal capability against the continental US. It also assumes that ballistic missile submarines will not enter the force by mid-1976, but the TU-16 force could be modernized with an ASM by that time.

In short, the force presented in Table A is a relatively conservative projection of present and likely future systems along the lines of evolution now evident.

Case B: The second projection (see Table B) assumes that by mid-1976 the Chinese strategic forces will still provide primarily a regional capability but rapid progress will have been made in solid-propellant systems so that they begin to enter the force in some numbers after 1973. As a result, the CSS-1 force is phased down more rapidly than in Case A and CSS-2 deployment is held at lower levels to permit more rapid deployment of solid-propellant systems in silos.

It is also assumed that the TU-16 force builds at the same rate as in the first projection and is armed with an ASM toward the end of the period. In addition, either a diesel-

CASE A TABLE

POSTULATED REGIONAL FORCE OF MISSILES[a] AND BOMBERS

	Mid-Year			
	1973	1974	1975	1976
CSS-1	15–30	15–30	15–30	25–5
CSS-2	20–40	40–60	60–80	80–100
Ching-yu System	...	0–5	5–10	10–25
Solid-Propellant MRBM or IRBM	...	...	...	0–10
TU-16	75–125	100–150	125–175	150–200

[a] In the case of missiles, the postulated force refers to the number of deployed launchers.

CASE B TABLE

POSTULATED REGIONAL FORCE OF LIQUID AND SOLID PROPELLANT MISSILES,[a] BOMBERS, AND BALLISTIC MISSILE SUBMARINES

	Mid-Year			
	1973	1974	1975	1976
CSS-1	15–30	15–30	25–5	20–0
CSS-2	20–40	30–50	30–50	30–50
Ching-yu System	...	0–5	5–10	10–25
Solid-Propellant MRBM or IRBM	...	0–10	20–40	40–80
TU-16	75–125	100–150	125–175	150–200
Diesel-Powered Ballistic Missile Submarine (SSB) or	...	...	0–2	0–4
Nuclear-Powered Ballistic Missile Submarine (SSBN)	...	...	..	0–1

[a] In the case of missiles, the postulated force refers to the number of deployed launchers.

powered ballistic missile submarine or a nuclear-powered model may be entering the force. If the projected missile submarine is diesel-powered it would probably be a transitional system. It could have 3 to 6 tubes if it is a version of the G-class or about 16 tubes if it is a prototype of a nuclear-powered version. If the Chinese progress rapidly, they could have the first 16-tube nuclear-powered submarine in the force by mid-1976.

Case C: The third force projection is based on the assumption that the Chinese achieve a high rate of progress with an ICBM capable of striking a significant number of targets in the US. The CSS-2 force would level off at a lower number than in our first projection because resources would be going to ICBM deployment in silos. The CSS-1 would stay in the force longer to compensate. (As in Case A, solid-propellant peripheral attack systems would not enter the force until the end of the period.)

The Ching-yu missile system would be deployed at a slightly higher rate than in the

other two cases as a supplement to (or part of) the ICBM force. The TU-16 force is the same as in the other two cases.

If the Chinese stress an intercontinental capability as early as possible they would probably not deploy a diesel-powered ballistic missile submarine but would go straight to a nuclear-powered system. The first unit or two could enter the force by mid-1976, and the buildup during the latter part of the decade would be more rapid because resources had not been devoted to a diesel-powered model.

CASE C TABLE

POSTULATED REGIONAL AND INTERCONTINENTAL FORCE [a]

	Mid-Year			
	1973	1974	1975	1976
CSS-1	15–30	15–30	15–30	15–30
CSS-2	20–40	30–50	30–50	30–50
Ching-yu System	...	0–5	10–20	20–40
ICBM (c. 6,000 n.m. range)	...	...	0–10	20–30
Solid-Propellant MRBM or IRBM	...	...	...	0–10
TU-16	75–125	100–150	125–175	150–200
Nuclear-Powered Ballistic Missile Submarine (SSBN) with 16 Launch Tubes	...	...	...	0–2

[a] In the case of missiles, the postulated force refers to the number of deployed launchers.

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