F-2 J. Intell Program
2

~~Secret~~

Interagency Intelligence Memorandum

(b)(1)
(b)(3)

Prospects for Arms Production and Development in the Republic of China

~~Secret~~
NIO IIM 76-020
May 1976

Copy № 214

PROSPECTS FOR ARMS PRODUCTION AND DEVELOPMENT IN THE REPUBLIC OF CHINA

CONCLUSIONS

The Republic of China would prefer to rely on the US for military assistance, but has apparently concluded that it can no longer count on doing so indefinitely. To maintain a strong defense posture, the government is attempting to expand domestic arms production, develop new weapons systems, and find other sources of modern weapons and advanced technology.

— As these programs advance, the Nationalists should be able to reduce further their dependence on the US.

— They will continue to be heavily dependent on foreign sources for modern weaponry.

— The ROC appears to have little prospect of becoming self-sufficient in arms production within the next decade.

The major problem the government faces in manufacturing conventional arms, munitions, and spare parts is the lack of defense industries similar to those in the US and other advanced countries.

— Because of its reliance on the US, the ROC has never developed the high technologies and skills necessary for manufacturing arms and military supplies on a commercial basis.

NOTE—This memorandum has been prepared jointly by the Central Intelligence Agency and the Defense Intelligence Agency and coordinated with the Bureau of Intelligence and Research of the Department of State.

— The relatively small amounts of weapons and munitions now being produced on Taiwan come from military armaments plants and research centers. The facilities are not capable of manufacturing these items in large quantities.

— To increase production, the government is currently encouraging commercial companies to expand their product lines to include weapons, munitions, and spare parts.

— The corporations have the skilled manpower and much of the technology needed to produce many military items. They will, however, require technical assistance, specialized equipment, and technologies to manufacture large weapons such as tanks and artillery and sophisticated electronics such as radars.

— Commercial companies will probably be reluctant to commit large amounts of capital until they have gained experience in producing weapons for government and foreign markets.

— Thus, while the potential exists on Taiwan for an expanding arms industry, growth in this field is likely to be slow initially.

The ROC has found several countries outside the US that are willing to sell arms and technology. The procurement of advanced weapons from these sources will, however, create additional problems for the government.

— The Nationalists probably would have difficulty maintaining foreign weapons systems with which they are unfamiliar.

— This problem could be severe if the ROC had to rely on foreign suppliers for critical spare parts. For this as well as economic reasons, the government is seeking licenses to manufacture most items on Taiwan.

The ROC appears to be achieving some success in its nuclear, missile, and chemical warfare programs, although none of these programs will contribute significantly to Nationalist military capabilities for at least several years.

— The ROC is attempting to develop the capability to fabricate nuclear devices. If the ROC violates safeguard agreements, it probably could develop the capability and acquire the materials to build a crude nuclear device in three to four years.

— The ROC program to develop short range surface-to-surface missiles is still in its infancy. The Nationalists obtained assistance from Israel and have begun producing limited numbers of prototype antiship missiles based on the Gabriel Mark II. A ballistic

missile with a range of 110 kilometers is being developed, but will not be operational before 1980. The ROC also is interested in developing a longer range ballistic missile that could hit the mainland.

THE DETAILS

1. The US has been the principal supplier of arms and military equipment for the Republic of China since the Nationalists were forced to withdraw from the mainland some 26 years ago. But that is changing. In recent years, the US has sharply reduced its military presence in Asia and continued to move ahead in its efforts to normalize relations with the People's Republic of China; the US has in fact been cutting back its military assistance to Taiwan.

2. These developments have raised serious doubts in Taipei about the long-term reliability of the US as a major source of weapons and supplies. The ROC clearly would prefer to rely on the US for military assistance, but has apparently concluded that it can no longer count on doing so indefinitely.

3. In an attempt to maintain its defense posture and preserve a credible military deterrence, the ROC is attempting to become more self-reliant by expanding its own capabilities for developing and manufacturing weapon systems. In addition, Taipei is actively seeking new sources from which it can procure advanced weapons and technology.

Domestic Arms Production

4. The ROC already produces a variety of weapons and munitions in limited quantities for its air, ground, and naval forces. For example, Taiwan manufactures infantry weapons such as rifles, machine guns, 105-mm howitzers, recoilless rifles, antitank rockets, land mines, hand grenades, explosives, and munitions. In addition, the ROC produces military vehicles such as jeeps and trucks and communications equipment.

5. Most items now being manufactured in Taiwan are copies of US-designed weapons and many require key components made in the US. The only non-US weapon that is produced in significant quantities is the M-64 rifle [redacted] The ROC plans to purchase plants and equipment so that it can expand its production of ground forces equipment and munitions. Taiwan also plans to begin producing larger artillery pieces such as 155-mm guns and howitzers.

6. The ROC aircraft industries also are expanding. Under a coproduction agreement with the US, Taiwan last year started assembling the F-5E fighter. Taiwan manufactures some parts for the F-5E, but major components of the aircraft such as avionics, jet engines, and weapons systems are produced in the US. The ROC has already built about 30 F-5Es and plans to complete a total of 120 of the aircraft within the next two years. The ROC has requested approval to build 80 additional F-5s. Between 1964 and 1974, Taiwan assembled 55 PL-1 trainers, but production has slowed and may be ending. The ROC is also coproducing the UH-1H helicopter under license to the US. More

than 80 of the UH-1Hs have been built. A total of 118 are to be completed under the contract. Aircraft repair and maintenance facilities on Taiwan are capable of servicing virtually all aircraft now in the ROC inventory.

7. The ROC is also making progress in improving its navy, although it still relies heavily on the US. Taiwan manufactures small patrol boats and service craft and is modernizing the older ships provided by the US. The major emphasis has been on re-arming old naval ships with more modern weapons. For example, the ROC has installed the US-made Sea Chaparral surface-to-air missile systems on four destroyers. Three other destroyers are being equipped with the US-designed Asroc antisubmarine rocket system, but the ROC lacks trained personnel to maintain the Asroc equipment.

8. With US assistance, the ROC is also moving ahead with plans to begin construction on larger naval ships. Taiwan recently concluded a contract with a US firm to build two multi-mission patrol ships, which will be armed with surface-to-surface missiles. The first unit is being built in the US and should be completed next year; the second ship will be constructed in Taiwan using materials and technical assistance provided by the US company. The ROC plans to build 20 of the patrol ships; most are to be assembled at shipyards in Taiwan.

9. ROC shipyards have demonstrated the capability to handle maintenance and major repair work on naval vessels. The Nationalist Chinese are currently overhauling the two submarines the US provided for training. This is the first time the ROC has overhauled submarines on its own. There have been some delays in this program, but one of the submarines should be completed this spring.

Overseas Markets

10. The ROC is not a major supplier of arms and is not likely to become one in the near future. Taiwan has provided several million rounds of small arms ammunition to the Philippines and assisted Singapore by training some pilots. A Nationalist military team consisting of four instructor pilots and 17 technicians is now in Jordan to assist in the training of pilots and maintenance personnel for the F-5E aircraft.

11. There is no evidence that Taiwan has provided significant amounts of weapons or munitions to any country. Recent reporting does suggest that there is a ready market especially in Southeast Asia for the conventional arms, munitions, and military supplies that Taiwan manufactures or is now developing.

12. Indonesia, Singapore, Malaysia, and the Philippines have approached Taipei about purchasing military equipment. Several countries reportedly have expressed interest in the turboprop trainer that Taiwan is currently developing, and Singapore has asked about buying some F-5E fighters. Any sales of coproduced weapons would require US approval.

13. Most of Taiwan's arms and munitions and military hardware is produced at military research and armament plants and are not yet available in sufficient quantities to export. These facilities are expanding their capabilities to produce weapons systems, but they cannot meet the needs of the ROC armed forces.

14. Taipei appears to recognize this problem and is actively encouraging commercial companies to enter the field and manufacture arms, munitions, and military supplies. The government opened a military products exhibition in Taipei on April 14. The exhibit reportedly is directed at promoting self-sufficiency through cooperation between the government and private firms. More than 1,000 items have been displayed but only 80 or so are locally manufactured. Most of the items represent US parts and components that the government would like to get commercial companies to manufacture.

15. The ROC has sent delegations to numerous countries to discuss the possibility of Taiwan providing military hardware and assistance. Taipei is apparently trying to drum up business so that it can demonstrate to the commercial companies that there is a market overseas for any surplus weapons and military supplies that they produce. In addition, Taipei probably sees international political advantages in developing domestic weapons production for sales overseas.

16. The one field in which the ROC possesses the potential to become a major source for foreign

markets is chemical warfare. Taiwan has a relatively advanced chemical agent program, and several countries have reportedly approached it seeking to purchase agents and technology. Taiwan, however, has established a strict policy that under no circumstances will it export chemical agents or related technology. The ROC program is founded on technology and assistance provided by Israel, and this policy may well have been one of the stipulations in the original agreement that Taiwan signed with

Third Country Arms

17. The ROC has achieved limited success in recent years finding new sources for weapons and technology.

18.

19.

20.

21. The ROC has sought to obtain additional weapons, equipment, and technology from these and other countries, but no deals have been concluded so far. Taiwan is particularly interested in obtaining missiles and/or related technology and is attempting to get the following systems:

22.

Prospects for Third-Country Arms

23. At the present time, Taiwan can only get some of the weapons, technology, and equipment that it seeks from countries other than the US. Because of their relations with the PRC, several countries have already refused to sell arms to Taiwan, but others have continued to show a willingness to sell weapons and military hardware to the ROC.

24. Taiwan reportedly considers itself in a time-bind and believes that it must hurry if it is to get the modern weapons and technology that it seeks. The ROC appears to be concerned that additional sources of military hardware will dry up as other countries follow the US lead and move to improve their ties with the PRC.

25. Of the countries from which Taiwan has sought arms, only Israel is likely to remain as a reliable source well into the future.

26. France, Italy, West Germany, and the UK are receptive to selling weapons, equipment, and technology to the ROC, but all of them probably would put restrictions on the types of hardware that they would provide. Both the UK and France have sold aircraft and technology to the PRC, and they are unlikely to risk losing this market by selling advanced aircraft to the ROC.

probably would be willing to sell them to the ROC, if the US approved the sale.

27. France, West Germany, Italy, and the UK manufacture defensive missiles that the ROC is interested in acquiring. US approval and encouragement of such sales by third countries might induce them to provide these and other weapons and technology to Taiwan.

Research and Development

28. In addition to the weapons that it is already producing or obtaining from foreign sources, the ROC is conducting research and development work on a variety of weapons and equipment. The missile program has a high priority; Taiwan is also doing work on aircraft, tanks, artillery, munitions, and chemical warfare.

29. The Nationalist Chinese are developing three aircraft on their own—two trainers and a small transport. The turboprop trainer prototype, which first flew in late 1973, has progressed slowly. Production of this trainer hinges largely on the ROC obtaining rights to coproduce the US-made gas turbine engine; the US has recently agreed to provide 43 of the engines. The transport is scheduled to begin flight testing in two years, and a jet trainer prototype is planned for construction by late 1979. Taiwan has a large pool of experienced engineers and technicians, but they have had relatively little design and research training. For this reason, the ROC will be hard pressed to produce an advanced fighter without massive technical assistance from the US or other countries.

30. The Nationalists committed themselves to the development of advanced weapons as early as 1965 when they established the Chung-Shan Institute of Science and Technology. The institute consists of four research departments—missile, nuclear, chemical, and electronics.

Missile Program

31. This program is still in its infancy, but is making slow but gradual progress. The ROC efforts appear to be directed primarily towards developing a short range surface-to-surface antiship missile that can be used offensively as well as defensively.

32. The ROC has built and is expanding facilities in support of its missile program. They include test facilities at the institute, a missile test range on the southeastern coast, a solid propellant production plant, and several missile component production plants that are in varying stages of construction.

33. The ROC apparently obtained sufficient technical data and assistance to develop its own version of the Gabriel Mark II antiship missile, which it calls the Drone Bee. Between July 1975 and April 1976, the ROC test flew this missile 18 times, but more than half of them were failures. The last three test flights in late April failed. Taiwan is developing the Drone Bee as an antiship weapon to counter PRC naval craft equipped with the Styx missile as well as for defense against invading forces. The Drone Bee is suitable for use on ships or from shore installations. Taiwan hopes to complete testing on the Drone Bee by the end of 1977, when production is scheduled to begin. The ROC plans to produce some 400 of the missiles.

34. The Drone Bee is also serving the important function of providing the Nationalists experience in the development of missiles. The ROC also has plans to build other surface-to-surface missiles and one of them will be capable of hitting targets on the mainland from launch sites on Taiwan.

35. Taiwan reportedly has a 110-km range ballistic missile, called the Green Bee, in the planning stage. This missile is expected to carry about a 200-km payload. The Green Bee cannot reach the mainland from Taiwan, but there are reports that it will eventually be deployed on the offshore islands. The ROC considers the Green Bee as an intermediate step towards the development of a surface-to-surface missile that will have a range of about 500 kilometers. From Taiwan, that missile would be capable of hitting targets more than several hundred kilometers deep in the PRC.

36. ROC scientists have also worked on a series of artillery-type rockets called Working Bees which carry high explosive and chemical warheads as far as 14 kilometers. In addition, the ROC has done research on developing a wire-guided antitank missile based on the Soviet AT-3 Sagger, which it obtained from South Vietnam. [redacted] provided an analysis of the AT-3 system and perhaps some components. This program has temporarily been shelved.

Missile Technicians

37. The scientists and technicians assigned to the various missile projects appear to be very capable and in the majority of cases, well trained, mostly in US institutions. These people, however, are largely theoretically oriented and lack technical training and experience. The ROC has recognized this problem and is trying to correct it by training programs.

38. The ROC scientists started out with no missile design or development experience, and this experience will have to be acquired on the job. Within the next two to three years, they will probably be able to work out most of their problems, while they acquire the necessary experience. It seems likely that development of the more sophisticated missiles, even with outside help, will require longer times than allowed by present schedules.

Foreign Technology

39. As ROC scientists try to develop larger rocket motors, they will have to rely more on foreign assistance. Specific areas include ablative materials, case bonding and insulation techniques, high strength materials, and precision control mechanisms. All of these types of technology are, however, available from a number of other countries.

40. So far, the ROC has been quite successful in acquiring the necessary equipment to carry on the development of their small missiles. Taiwan also seems to have acquired the minimum equipment necessary to develop an inertial guidance system for the Green Bee missile, and possibly for the 500-km missile as well. The Nationalists do not, however, have sufficient solid-propellant production capability to produce grains for the 500-km missile. They may also have trouble producing the grain for the Green Bee if they do not obtain extra mixing equipment, and the ROC may have trouble acquiring such equipment if the US denies it an export license for the larger equipment.

Nuclear Program

41. The ROC has been conducting the preliminary studies and experimentation in nuclear research and high explosive technology that are necessary for it to develop a nuclear device. The leader of the research team conducting these studies believes, however, that Premier Chiang Ching-kuo would not order the fabrication of a nuclear device until 1977 at the earliest, and then only if the ROC felt it was necessary for its survival. It is not likely that the ROC will actually be in a position to take that step until later this decade. In any event, diversion of nuclear materials to fabrication of an explosive device would entail violation or abrogation of IAEA safeguards. Detection of such a violation could lead to sanctions by nuclear suppliers. These sanctions would probably take the form of interruption of deliveries of nuclear materials and equipment; this could seriously interfere with Taiwan's civil nuclear program, which depends on foreign sources for enriched uranium. Sanctions would not materially affect the weapons program, because the ROC already has enough fuel for the research reactor for many years.

42. A first device could be delivered only by surface means or by a large transport aircraft such as a C-130. Once a crude nuclear device has been developed, it would take the ROC at least two additional years to develop a nuclear weapon small enough to be carried externally on a tactical aircraft. Nuclear warheads suitable for use with the surface-to-surface missiles now in the planning stage or under development would require many more years to develop.

43. The Nationalist Chinese have steadily expanded their facilities at the Institute of Nuclear Energy Research while attempting to obtain additional ones such as a heavy water production plant for a complete nuclear fuel cycle. The main facility at the Institute is the Taiwan research reactor which is fueled with natural uranium and moderated with

heavy water. When operating under average conditions, this reactor produces about 10 kilograms of "weapon grade" plutonium per year. The reactor was obtained from [redacted] along with fuel for more than two full core loadings and heavy water. The ROC also purchased 162 tons of uranium metal from South Africa; this metal is fabricated at the Institute into fuel elements for the reactor.

44. In order to use the plutonium produced by the reactor to fabricate a nuclear device, the Nationalist Chinese must separate the plutonium from the spent fuel. In 1973 the US pressured the ROC into canceling a contract for a pilot-scale fuel reprocessing facility that it had signed with a [redacted] company. The ROC is currently negotiating with a [redacted] company for the procurement of the components and technical design for a pilot reprocessing plant. Acquisition of such a facility would provide Taiwan with the capability to obtain sufficient plutonium for a significant nuclear weapons program.

45. A very small reprocessing laboratory has recently been completed at the Institute. It will give ROC scientists useful training and practical experience, but it is not capable of separating significant quantities of plutonium. Meanwhile, there have been sporadic reports and some physical evidence that small amounts of fuel from the reactor are being reprocessed at other hot laboratories to obtain plutonium, but the amounts recovered would be extremely small.

Nuclear Weapons

46. The ROC will not be able to develop a nuclear weapons capability until significant quantities of plutonium are available. The ROC may be satisfied to acquire the capability to develop and produce only a few test devices rather than weapons. The work at the Institute appears to be directed at the basic theoretical design and research required for such devices.

47. During 1974 and 1975 a group of ROC nuclear scientists reportedly used computer facilities at the Chung-Shan Institute of Science and Technology to conduct extensive theoretical design calculations for a first generation nuclear device. Experiments were carried out, presumably in the areas of high explosives, shockwaves, and detonating systems. Problems were encountered in the experiments, but these were solved and the program was considered a success in September 1975. The success of this design work probably led to the premier's statement to the press last fall that the ROC now had the capability to manufacture nuclear weapons.

Nuclear Scientists

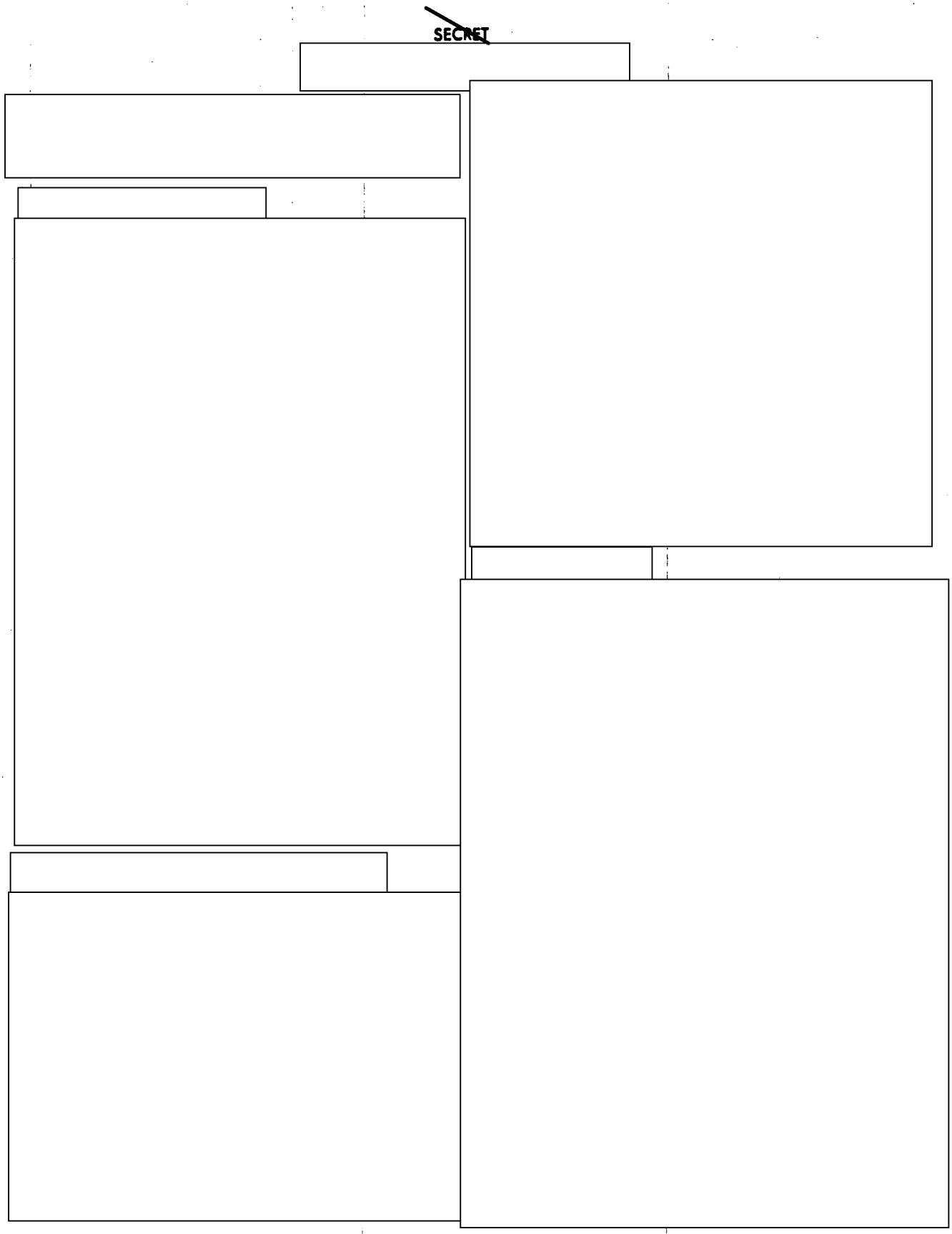
48. The ROC has sufficient trained manpower to build and operate all of the existing research facilities for the nuclear fuel cycle, but may encounter difficulties if they build additional or larger facilities to support a nuclear weapons program. The only problem area that has been specifically identified so far is a lack of trained reactor operators for future nuclear power plants. By the time these plants or any other nuclear facilities are completed, however, the ROC should be able to train enough operators and technicians.

49. Most top nuclear scientists in the ROC received their formal education and training in US schools. Many have since returned to the US, Canada, France, and Israel for specialized training in various aspects of nuclear science engineering.

50. Nuclear courses now being taught on Taiwan at the Tsing-Hua University have already benefited the ROC nuclear program. Between 1958 and 1970, for example, about 200 scientists received advanced degrees in nuclear physics, nuclear chemistry, and nuclear engineering. These students formed the nucleus of the ROC nuclear research program. The Institute of Nuclear Energy Research is the only major organization in the ROC that does work in the nuclear field. It employs over 600 people. They are relatively well qualified and have excellent facilities to work with.

[redacted]

51. [redacted]



[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

Electronics

67. The only electronics equipment that the ROC currently produces in quantity for the armed forces are AN PRC-77 field radios, which are coproduced under a US license. There is a modern electronics industry on Taiwan; however, relatively little of its technology is suitable for manufacturing the sophisticated equipment needed by the military.

68. The ROC is encouraging commercial firms to produce military electronics systems and components. Before the companies can do so, however, they will have to invest large amounts of capital

to build and equip modern plants. The commercial firms lack experience in manufacturing equipment for the military and probably will be slow to commit capital to such enterprises.

69. ROC research and development work on electronics is just beginning. The Nationalists will depend heavily on foreign sources for technical data and assistance to develop and build sophisticated military equipment such as radars, avionics, and missile guidance systems. Even with advanced foreign technology and participation by commercial firms on Taiwan, the ROC will probably not be able to meet the requirements of the armed forces for at least a decade.