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SAO/ST-SS-03-148-72

DEFENSE INTELLIGENCE AGENCY

BIOLOGICAL WARFARE CAPABILITIES--ASIAN COMMUNIST COUNTRIES (U)

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AMENDMENT "A" TCS-692023/72-1 posted, see inside cover

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(b)(3):50 USC 403-1(i),.

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Amendment A

US Army Materiel Command
Foreign Science and Technology Center
Charlottesville, Va. 22901

BIOLOGICAL WARFARE CAPABILITY--ASIAN COMMUNIST COUNTRIES (U)

Publication No. SAO/ST-SS-03-148-72, May 1972, is amended as follows:

1. The old pages listed below are to be removed and destroyed in accordance with existing security regulations and new pages are substituted therefor, or are added.

Remove pages:	Insert pages:
----------	o.i and o.ii
Title page thru xiv	i thru xviii
13 and 14	13 thru 14.2
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----------	142.1 and 142.2
----------	145 and 146

WARNING

(b)(3):50 USC 403-1(i),.

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2. Add (see first page) to front cover, and makes other pen and ink changes as listed.

3. Make the following pen and ink changes:

Front cover, and 1473 (p 141): Change "Biological Warfare Capability" to read "Biological Warfare Capabilities".

Page 1, para 1, line 20: Between "Military" and "Sciences" insert "Medical".

Page 6, para 3d, line 4: Insert "Medical" between "Military" and "Sciences". read con p7 6 and stats

Page 6, para 4c, line 1: Delete "Warfare" and insert "Defense".

Page 6, para 4c, line 6: Delete "PLA" and between "of" and "Medical" insert "Military".

(b)(3):50 USC 403-1(i),

Page 7, para 6: Change classification from "(~~TS~~ [redacted]" to "(~~TS~~ ~~NFD~~)".

(b)(3):50 USC 403-1(i),

Page 12, para 6d, line 8: Delete "Possibly, this installation is the Chemical College previously referenced".

Page 17, para 11, line 15: Delete reference No. "(19)".

Page 17, para 12, line 10: Change "The Military Medical Science College" to read "The Academy of Military Medical Sciences".

Page 17, para 12, line 12: Delete reference No. "(22)".

Page 25, para b, line 1: Change "The Military Science College" to read "The Academy of Military Medical Sciences".

Page 25, para b, line 4: Change "the Military Medical Science College" to read "the Academy of Military Medical Sciences".

Page 25, para b, line 7: Delete "College" and add "Academy".

Page 25, para b, line 8: Delete reference No. "(73)".

(b)(3):50 USC 403-1(i),

~~TOP SECRET~~ (b)(3):50 USC 403-1(i),.

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RELEASE COMMENTS

This DIA study, SAO/ST-SS-03-148-72, "BIOLOGICAL WARFARE CAPABILITIES--ASIAN COMMUNIST COUNTRIES," May 1972, (b)(3):10 USC 424,(b)(3):50 USC 403-1(i),.

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~~Classified by~~ (b)(3):10 USC 424,.
Exempt from GDS of EO 11652
Exemption category: (Para 5B2)
Declassification: Impossible to determine

o.i

(b)(3):50 USC 403-1(i),.

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(b)(3):10 USC 424,(b)(3):50 USC 403-1(i),.

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October 1972

BIOLOGICAL WARFARE CAPABILITIES-- ASIAN COMMUNIST COUNTRIES (U)

(b)(6),.

SAO/ST-SS-03-148-72

DIA Task No. T70-03-11

May 1972

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(b)(3):50 USC 403-1(i),.

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Exemption category: ~~(Para 5B2)~~
~~Declassify on:~~ Impossible to determine

(b)(3):50 USC 403-1(i),.

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PREFACE (U)

(U) The purpose of this publication is to assess all information concerning the biological warfare capabilities of the People's Republic of China, North Vietnam, North Korea, and Mongolia. For each of these countries information is included concerning: order of battle for biological warfare; identification and description of biological warfare materiel; production installations and capabilities; stockpiles and storage facilities; doctrine and procedures which would govern the use of biological warfare; defensive measures to be taken in the event biological warfare was initiated; and applicable research, development, and testing programs.

(b)(1),.

(U) Constructive criticism, comments, and suggested changes are solicited and should be forwarded to the Defense Intelligence Agency, Washington, D. C. 20301, ATTN: DT-1A.

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Preface ----------	iii and iv	October 1972
List of Effective Pages ----------	v and vi	October 1972
Record of Changes ----------	vii and viii	October 1972
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List of Illustrations ----------	xiii	October 1972
List of Tables ----------	xiii and xiv	October 1972
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DD Forms 1473	141 and 142	Original
	142.1 and 142.2	October 1972
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Section I.

COMMUNIST CHINA

A. INTRODUCTION (U)

1. (~~C~~) Historical Background (U)

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(b)(1),(b)(3):50 USC 403 (g),(b)(3):50 USC 403-1(i),.

3. ~~(C)~~ Geographical and Political Factors (U)

a. (U) Communist China is the third largest country in the world, occupying about 3.7 million square miles, and the population comprises about one-fifth that of the world. To the North and West an extensive boundary is shared with the Soviet Union, a boundary which separates the two most powerful communist countries. To the South, China borders on several weak, unstable countries, one being North Vietnam. She has used North Vietnam as a base for Communist operations against neighboring countries. China also shares common borders with North Korea, Mongolia, Afghanistan, India, Nepal, Bhutan, Burma, and Laos. The mainland is within 2500 nautical miles of every major target in Asia as well as European USSR. Two-thirds of China's area is mountainous or desert-like, and ninety percent of the population live in one-sixth of the country, primarily in the fertile plains and deltas of the east.[8]

(b)(1),.

(b)(3):50 USC 403-1(i),.

(b)(1),(b)(3):50 USC 403 (g),(b)(3):50 USC 403-1(i),.

(b)(1),(b)(3):50 USC 403 (g),.

B. ORDER OF BATTLE (U)

4. ~~(C)~~ Military Organization (U)

(b)(1),(b)(3):50 USC 403 (g),.

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5. ~~(C)~~ Military Equipment (U)

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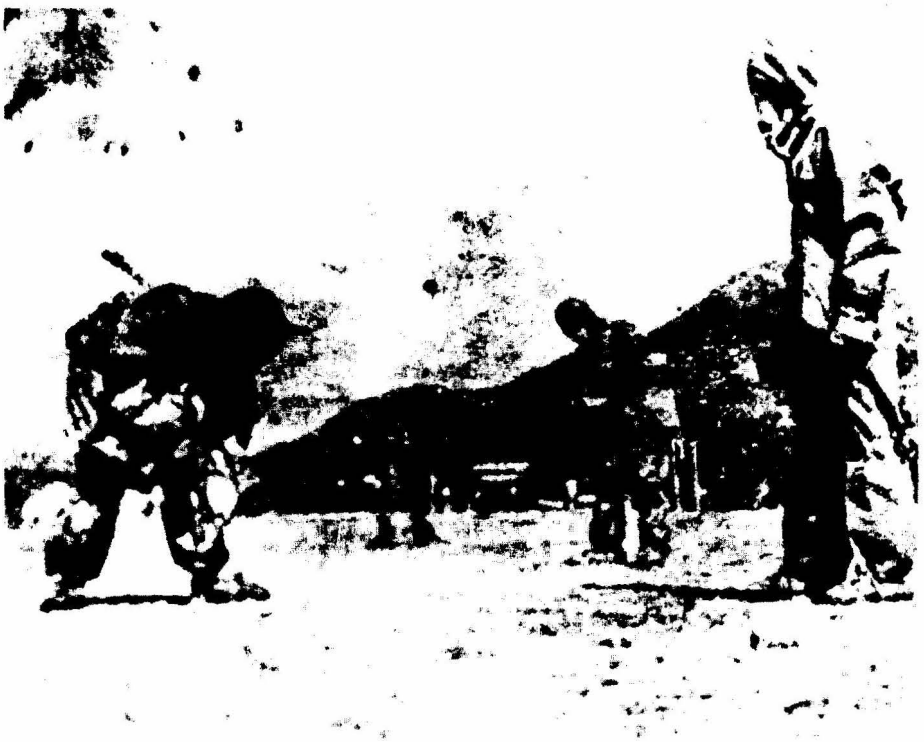

(UNCLASSIFIED)

Figure 1. CBR reconnaissance troops in light protective clothing (U).

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Figure 2. Vehicle ground decontamination exercises (U).

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Figure 3. Troops preparing to ford stream in full protective clothing (U).

(b)(1),(b)(3):50 USC 403 (g),(b)(3):50 USC 403-1(i),.

(b)(1),(b)(3):50 USC 403 (g),(b)(3):50 USC 403-1(i),.

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(b)(1),(b)(3):18 USC 798,(b)(3):50 USC 403,(b)(3):50 USC 403 (g),(b)(3):50 USC 403-1(i),(b)(3):P.L. 86-36,.

(b)(1),(b)(3):18 USC 798,(b)(3):50 USC 403,(b)(3):50 USC 403 (g),(b)(3):50 USC 403-1(i),(b)(3):P.L. 86-36,.

c. (U) ChiCom pictorial magazines have shown naval personnel operating a one-man back pack decontamination apparatus. Another illustration shows sailors washing down the decks with hoses and scrub brushes. There are no recent reports to indicate what, if any, improvements have been made in equipment for decontamination onboard ships (figs 7, 8, 9).[16]

(b)(1),(b)(3):50 USC 403 (g),(b)(3):50 USC 403-1(i),.

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C. POLICY, STRATEGY AND TACTICS REGARDING USE OF BW (U)

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E. BW MATERIEL (OFFENSIVE) (U)

(b)(1),(b)(3):50 USC 403 (g),.

(b)(1),(b)(3):50 USC 403-1(i),.

(b)(1),.

d. (U) The Chinese have studied the transovarian transmission of Rickettsia tsutsugamushi by two types of Trombicella deliensis which provides basic information for establishing vector colonies and their subsequent infection for possible use in a vector-agent system.[41] In a 1966 publication Lu Pao-lin urged that extensive studies of insect culture be undertaken in order to remain abreast of foreign developments.[42]

(b)(1),.

(b)(1),.

g. (U) The Institute of Genetics, Chinese Academy of Sciences (CAS), is studying special topics in "microbacteriology" and entomology, areas of research considered the "vanguard for future bacteriological warfare."[40] Allegedly, recent discoveries in the field of bacteriology made by this institute have had profound effects on the entire mainland, but these discoveries were not disclosed.

F. BW MATERIEL (DEFENSIVE) (U)

14. ~~(C)~~ Decontamination (U)

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(b)(1),.

15. ~~(C)~~ Detection and Identification (U)

a. (U) There is little indication that the Chinese have conducted research to develop means of detecting and identifying biological agents. The results of some related research could be exploited for such a purpose. Tseng Fan-chi of the Wuhan Army General Hospital obtained rapid results in identifying 55 different species of bacteria by their biochemical reactions. The time required to identify bacteria by this technique was 20-24 hours as opposed to 4-5 days by conventional means.[33] An unknown author summarized a method in 1964 for determining the generation time of Bacillus anthracis.[34] The following year Li Liang-shan compared a broth method with the agar method to demonstrate the string-of-pearls reaction for B. anthracis. Details of the test were not given, however, the author claimed that results were identical. Possibly the modified reaction would have contributed to more rapid identification of B. anthracis.[35] Other studies suggestive of rapid identification were published by Chiang Shun-Ch'iu who experimented with incomplete antibodies for the diagnosis of brucellosis[36] and by Yun Chao-Chuan who compared various methods for identifying Brucella.[37]

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(b)(1),.

16. ~~(C)~~ Medical Protection (U)

(b)(1),(b)(3):50 USC 403-1(i),.

b. (U) Chinese military cadre are inoculated with a combined cholera and typhoid vaccine once a year. Claims have been made that all people of the nation have received vaccination for smallpox, and that the disease has been eradicated. Vaccines or antisera for typhoid, paratyphoid, typhus, diptheria, tetanus, rabies, plague, cholera, yellow fever, and Japanese B encephalitis have been developed, but the scale of use is not known. The use of live vaccines has been exploited in China. Live vaccines for brucellosis, plague, and anthrax are available.[3] Vaccines for the more serious animal diseases, such as, swine plague, hog cholera, rinderpest, and foot-and-mouth disease have been developed. A method of aerosol immunization was introduced into veterinary practice in 1964. The vaccine materiel was sprayed or dusted in a room so that animals were exposed and immunized.[57] There are no known instances concerning immunization of humans by the aerosol route. Continued efforts in aerosol research could have provided means for the mass immunization of the population and of animals in the event biological agents are used.

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(b)(1),(b)(3):50 USC 403-1(i),.

(b)(1),(b)(3):50 USC 403-1(i),.

(b)(1),(b)(3):10 USC 424,.

c. (U) The CPLA Veterinary University of China. The location of this institute and its true military affiliation cannot be verified. It could be part of the China People's University in Peking, or it might be misnamed because of incorrect translation.[74] An investigator, Liu Ching-hua, reportedly associated with the University, has studied the various types of Pasteurella isolated from 11 species of animals and fowl.[75] His observations of morphological, physiological, and biochemical properties indicated that there were no consistent host/bacterial specificities which could be reliably used to classify the 62 types of Pasteurella isolated. In general, although one strain Pasteurella might attack many species of domestic animals and fowl, a single species of animal might be infected by several strains of the bacteria. All strains isolated in nature could give rise to variant types when grown in artificial media. Although this study was apparently conducted to advance veterinary immunology, the basic data concerning susceptibility of animals to this disease and the genetic selection of mutant strains could be applied to other infectious diseases.

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(b)(3):10 USC 424,(b)(3):50 USC 403-1(i),.

(b)(1),(b)(3):50 USC 403 (g),(b)(3):50 USC 403-1(i),.

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(b)(1),(b)(3):50 USC 403 (g),(b)(3):50 USC 403-1(i),.

(b)(1),(b)(3):50 USC 403-1(i),.

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(3) (U) Ch'en Po-ch'uan, Hsu Chao-hsiang, Liu Yuan-yuan, and Fan Jui-lien, studied the infectivity of JBE virus in 1963.[95] They concluded that a plaque assay could be used for the routine titration of viral infectivity. A similar study was conducted the following year when these same investigators studied the plaque-forming characteristics of several different strains of this pathogen.[96]

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(b)(3):10 USC 424,(b)(3):50 USC 403-1(i),.

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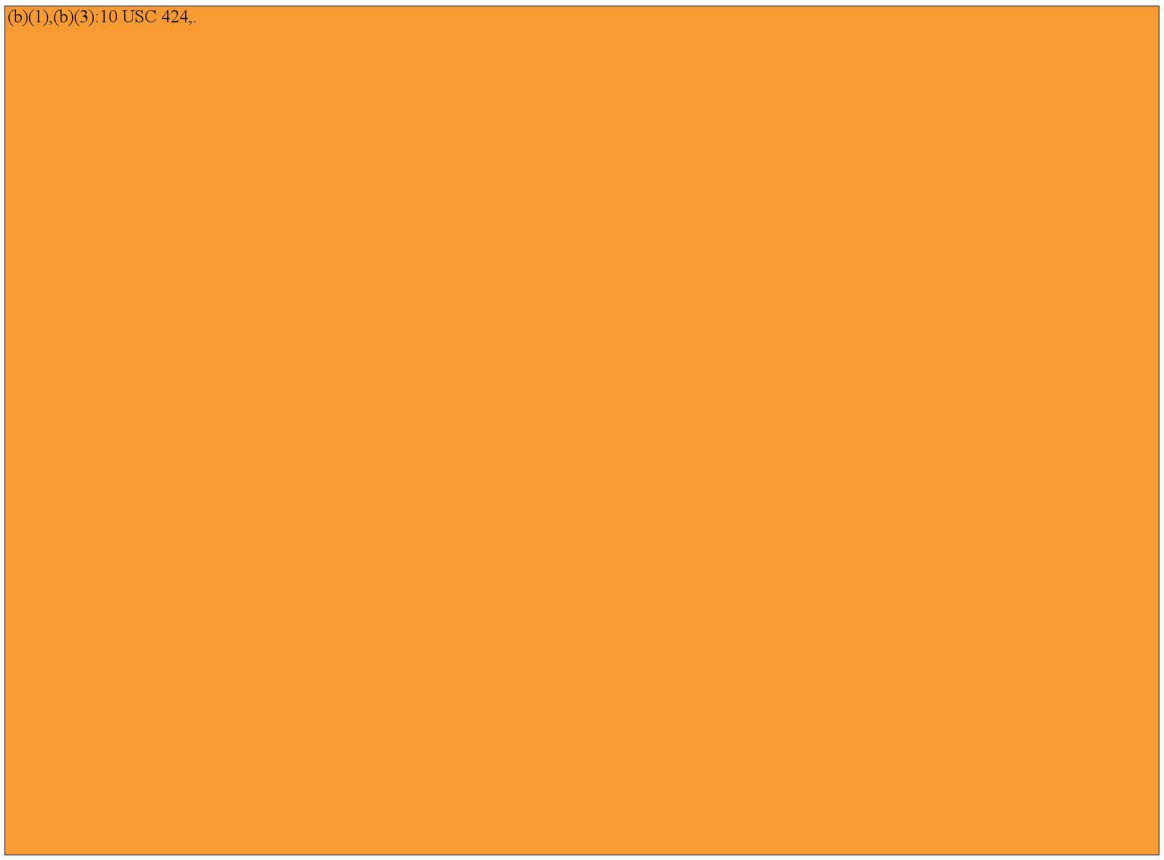

(6) (U) Mao Chiang-sen studied the effect of temperature and pH on the production of JBE virus and the effect of those parameters on interferon subsequently synthesized in chick embryo cell cultures.[104] The optimal temperature for virus growth was found to be 33.5° C, although interferon production increased as higher temperatures were reached. The optimal pH for interferon production ranged between 7.1 and 7.6, while the optimal pH for production of the infective virus was 7.8. These data suggest, therefore, that at pH7.8 and at 34.5° C, the Peking strain of JBE virus would propagate to maximum titers under conditions severely inhibiting the production of interferon. The Peking strain of JBE virus is the most virulent of those known.

(7) (U) Many other investigators at this institute have contributed also to general knowledge of the JBE virus. Included are P'ang Chi-fang who in 1964 reported observations made with an electron microscope while the virus of JBE was developing in chick embryo fibroblasts and in hamster kidney cells.[105] Wang Chin, 1960, studied

comparatively the growth of JBE virus in the brain and in the extra central nervous tissues of white mice; coauthor of the finished report was Huang Chen-hsiang.[106-107]

(8) (U) Hsu performed studies involving the use of mice in determining the mechanism of immunization against JBE.[108] Lieu investigated the enzymatic activity and effects of ribonucleic acid of JBE on mouse brain tissue.[109] Much of the data obtained from these studies relative to the growth characteristics of the JBE virus would be essential to support any effort to mass produce this virus as a potential BW agent.

c. ~~(C)~~ Institute of Epidemiology and Microbiology, Peking. (U)

(b)(1),.

(2) (U) Other work on brucella involving the agar diffusion reaction has been done by Yun Chao-ch'uan.[111] This spotty interest in brucellosis shown by Chinese investigators suggests that China is not free of the consequence of this chronic disease. Attempts to resolve problems affecting public health and the practice of veterinary medicine will generate a great deal of data, some of which would be applicable to the development of brucella pathogens for BW.

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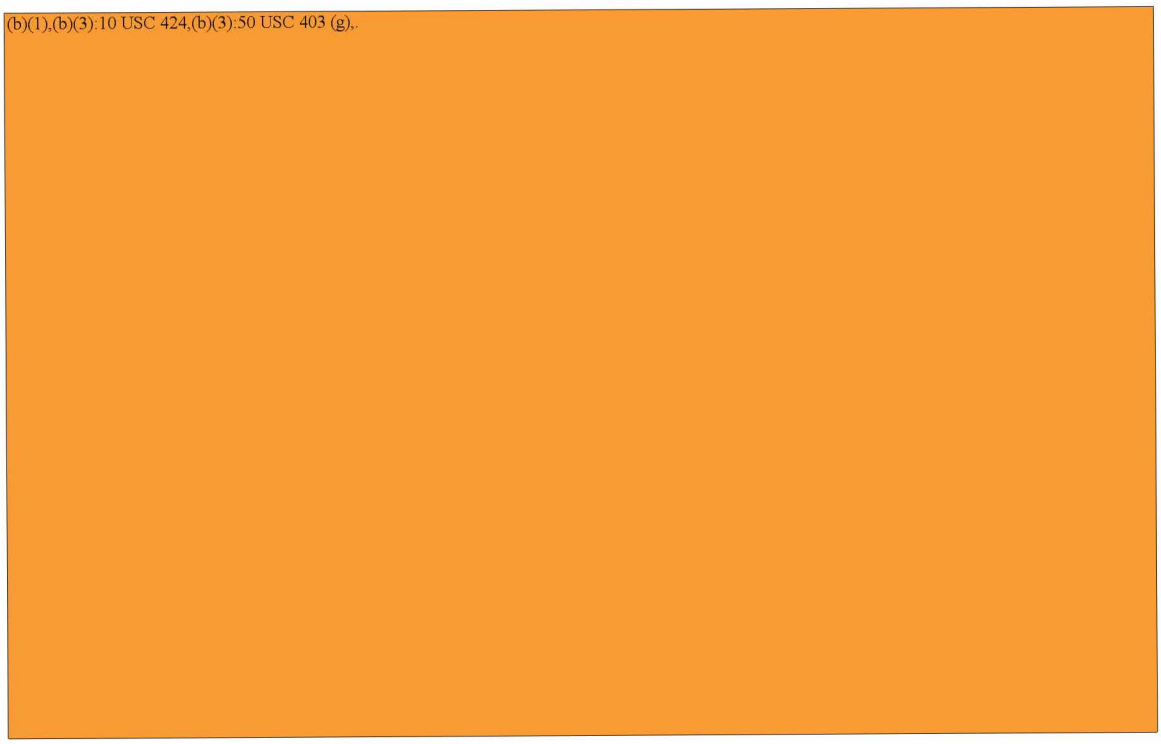
(b)(1),(b)(3):10 USC 424,(b)(3):50 USC 403 (g),.



(3) (U) In 1962, Wang Yung-chi, Lu Chin-han, Li Mei-jung, and Chang Yung-fu induced allergic encephalomyelitis in guinea pigs, albino rats, white mice, rabbits, and monkeys.[113] It was found that the pathological changes observed were much more complex in monkeys; this might have been used as a parameter to determine similar results in man.

(4) (U) In a paper presented at the 1963 Symposium sponsored by the Microbiology Society of China[114] Wang Yung-chi and coworkers described their findings of an interferon-like substance in chick embryo cultures infected with either type B epidemic encephalitis virus or yellow fever virus. Effective inhibitory concentrations were still present, even upon dilution of 1:160, a fact which indicated a need to make further adjustments in concentration to reduce the plaque count to 50%. In a follow-up study (1964), Wang investigated JBE virus culture, and elucidated the nutritional aspects of viral growth using monolayer tissue cultures.[115]

(5) (U) Other notable research conducted at the institute was that by Han Hung-lin and Pan Jen-chiang who studied the activation of botulinum type E toxin by trypsin.[116] This study confirmed the

previous observations of others. Available published research on the incidence of botulism in China is scarce, and the extent of research on the toxin is not apparent. Research on botulism would probably be in consonance with similar studies in other countries to combat its incidence, but might also aid any effort to develop this potential BW agent.

f. (U) Chengtu Institute of Biological Products (Chengtu Vaccine and Serum Institute), Chengtu. (U)

(1) (U) Wei Wen-pin characterized an interferon-like substance found in the supernatant fluid of a suspension of mouse lung tissue infected with a virulent strain of Rickettsia prowazekii.[117-118] The substance exhibited some properties quite distinct from other interferons. Wei and his coworkers were subsequently able to propagate R. prowazeki in monolayer cultures of embryonic mouse lung cells. Wei from 1946 to 1951 was engaged in research at the Pasteur Research Institute in France. In 1952 he was a member of the Chinese Committee to Investigate Alleged US Use of Bacterial Warfare in Korea.

(2) (U) Tung Tien-shun and K'ang Hsien-yuan are responsible for several original studies on Salmonella typhosa, causative agent of typhoid fever.[119] Chou has also done original work in isolating new subtypes of Shigella flexneri, causative agent of dysentery.[120] Studies on the rickettsiae and on the enteric pathogens make up much of China's efforts in microbiology. Work in these areas probably enjoys an emphasis second only to that given to JBE. The endemicity and epidemicity of these diseases demand that such work be performed primarily to upgrade the public health standards in attempts to eradicate these diseases from the environment. The studies they perform and data gathered therefrom could be used to support applicable R&D efforts.

g. ~~(C)~~ Changchun Institute of Vaccines and Serum, Changchun. (U)

(b)(1),(b)(3):50 USC 403-1(i),

(2) (U) Yang Chung-ch'i has published a paper entitled "Changes in the Amino Acids Composition of Culture Fluid of Pasteurella *(Yersinia) pestis EV strain During Their Growth."[121] The study revealed that various amino acids originally present in the growth medium were utilized by P. pestis according to a definite sequence--proline, serine, and theonine first, followed by glutamic acid only when the first three had been exhausted, and then aspartic acid. Glycine and alanine were utilized only after aspartic acid had been exhausted. Plague, carried chiefly by the tropical rat flea, has occurred in China for centuries and is likely to be present for some time to come. Data realized from studies of the pathogen are applicable to establishing growth parameters of this pathogen.

(b)(1),.

i. (U) Other Institutes of Interest. (U)

(1) (U) Investigators at the Fukien Institute of Epidemiology, Foochow have studied the vectors of Rickettsia tsutsugamushi,[128-129] the detection of Leptospira,[130-133] and immunological methods for identifying Coxiella burnetii. An Infectious Diseases Hospital at Foochow and the Fukien Provincial Hospital have also been mentioned. Studies on antibiotic resistant dysentery bacilli[134] and the serological variability of Shigella flexneri[135-136] were conducted there.

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*The use of the genus name Yersinia is consistent with current taxonomic practice, however because of past common usage and the greater familiarity of investigators with the genus name Pasteurella, the latter term will be used throughout this report.

(2) (U) Ch'en, China Medical College, studied the antibiotic resistance of a large number of strains of Shigella.[137] The Inner Mongolia Medical College, Huhekot published results of efforts to isolate drug resistant variants of Shigella flexneri.[138] The Institute of Antibiotics, Peking has evaluated various nitrogen sources for growth of Shigella species,[139] and the effect of additives on growth has been determined.[140] These studies might have some application in a BW program, although the enteric diseases are prevalent public health problems.

22. ~~(C)~~ Potential Agent Development (U)

(b)(1),(b)(3):10 USC 424,.

(b)(3):10 USC 424,(b)(3):50 USC 403-1(i),.

Table I. Potential BW Agents (U).

(b)(1),.

~~(CONFIDENTIAL)~~

Table II. Suspected Chinese Biological Warfare Agent Production Facilities (U).

(b)(1),.

Table II. Suspected Chinese Biological Warfare Agent Production Facilities (U). (Continued)

(b)(1),.

~~(CONFIDENTIAL)~~

(b)(1),.

24. ~~(C)~~ Biofermentation/Bioengineering as Related to BW Agent Developments (U)

a. (U) If a successful BW program is ever to be established, fundamental data derived from R&D efforts must first be scaled-up, through process research, so that large volumes of precisely defined biological materiel ultimately can be produced at will. Unfortunately for those who are working very hard to identify this effort, equipment and facilities used for these purposes are simply not unique. For instance: processes by which biological agent fills are produced need differ but slightly from those schedules which are used to manufacture bulk volumes of vaccine materiel; and fermentors already in use to cultivate yeasts and actinomycetes for established commercial purposes could be adapted easily to produce pathogenic organisms with but appropriate modifications for safety purposes. The facilities used for this research in China appear to be under civilian control but nevertheless these could be used to support military needs for the development of BW agents.

b. (U) Chiao Jui-shen, an investigator at the Institute of Plant Physiology, CAS, spoke at the 1963 Symposium on Progress in Microbiology held in Wuhan University and pointed out that although current emphasis

had been placed on developing the antibiotics industry, outstanding progress had also been made on developing biochemical engineering and industrial fermentation.[143] By isolating mutant strains of selected molds, by determining carefully critical parameters of their metabolism, and by modifying their nutritional requirements, notable increases in antibiotic yields had been made possible.

c. (U) At the Third All-China Scientific and Technical Conference on Antibiotics held in Dairen, September 1964, Chiang Ching-i and Ch'en Hung-shan of the Institute of Antibiotics, CAMS, outlined the conditions found necessary for the optimal culture in chicken embryos of cowpox and fowl plague viruses.[144]

d. (U) At this same symposium, Ma Yu-ch'eng of the Hua-tung Chemical Engineering College, Shanghai, noted the debt which biological engineering owed to chemical engineering.[145] The author forecast the continued development and greater application of biological engineering; he also stressed the need of specialized training in order to develop competent biological engineers.

e. (U) Lu Pao-lin presented a paper at the 20th annual symposium of the Entomology Society of China held in Peking in 1964, at which he reviewed progress made and elucidated major problems still facing those who were interested in medical insect culture.[146] He noted the work of Ho Ch'i in the fertilization of Chinese mosquitoes (A. Sinenses) by forced mating, and the work of Hu Neng who used fermented culture media to stimulate hatching; he also stressed the homogeneity of insect quality, and emphasized the importance of controlling culture conditions and population densities in order to increase breeding efficiency. He also urged extensive studies in order to keep abreast of foreign developments in insect culture.

f. (U) Su Ch'eng-ch'in, Chang Ching-fang, Chu Nan-ying, and Li Chi'huai of the Institute of Medical Biology, CAMS, Kun-ming, did original work in 1961-1962 on the isolation of latent cytopathogenic viruses from uninoculated tissue culture.[147] The viruses were not named, but data were obtained on the effects associated with regrowth of these viruses in monkey kidney cells.

g. (U) Ts'ao Chen-ch'in designed a continuous sterilizer for use in the fermentation industry.[148] In his report, the author evaluated various parameters related to the design, namely the time of continuous sterilization, the reaction speed constant, and the absolute temperature of sterilization.

h. (U) Another significant accomplishment has been the development of an automatic defoaming method for use in the fermentation industry.[149] Shen Yung-hsing described details of this development which compared in quality to the work of the Czechoslovaks, who have recently acquired equipment which controls automatically pH, foam, etc.

(b)(1),.

25. ~~(C)~~ Preservation of Microorganisms as Related to BW Agent Development (U)

a. (U) Another prerequisite for the militarization of biological materiel is an appreciation of the technology needed to stockpile agents in a viable state, so as to assure their availability for offensive use when required. The Chinese have conducted various studies which increased their knowledge of the applicable technology, mainly laboratory techniques associated with lyophilization (freeze-drying).

b. (U) In 1959, an improved method of lyophilization was described by Hsieh Chen-yang of the Second Military Medical College, Shanghai, CPLA Academy of Medical Science.[151] Many strains of fungi and influenza viruses, together with strains of bacteria which cause anthrax, cholera, brucellosis, and plague, were maintained in a lyophilized state without loss of cultural or physiological properties. These studies demonstrated the competence of Chinese investigators to control the stability, viability, and virulence of potential agents for BW purposes.

c. (U) Hsing Tsu-p'ei of the Hungshan Sanitation and Antiepidemic Experimental Institute, Wuchang, studied the survival of lyophilized Rickettsia tsutsugamushi (orientalis).[152] The results indicated that the rickettsiae retained their viability up to 9 years when stored at -10 to -20° C in sucrose solutions.

d. (U) Li Tut'ang and Hsu Hung-li of the Institute for Biological Products Research (Ministry of Public Health), Peking, studied survival rates of Vibrio cholerae after lyophilization.[153] V. cholerae was chosen as a model because of its marked sensitivity to physical and chemical factors associated with biological decay. The investigators found that after 10 years in the lyophilized state, cholera organisms survived without undergoing significant changes in morphological, biochemical, or serological properties.

e. (U) In 1965, investigators in the laboratory of the Wuhan Municipal Contagious Disease Hospital reported on a "simple and practical way of preserving bacteria," which allowed them to keep their cultures either in a refrigerator or at room temperature.[154] This method was used for 3 years and proved effective.

f. (U) Chu Cheng-ch'ing and Tung Ts'un of the Shanghai Insitute of Medical Industry, Ministry of Chemical Industry, Shanghai have also conducted a study of microbial preservation by refrigeration and desiccation.[155]

(b)(1),(b)(3):50 USC 403 (g),(b)(3):50 USC 403-1(i),.

(b)(1),(b)(3):50 USC 403,(b)(3):50 USC 403 (g),(b)(3):50 USC 403-1(i),(b)(3):P.L. 86-36,.

(b)(1),(b)(3):50 USC 403 (g),(b)(3):50 USC 403-1(i),.

(b)(1),(b)(3):50 USC 403 (g),(b)(3):50 USC 403-1(i),.

I. ANTICROP RESEARCH (U)

27. (U) General (U)

a. Communist China, the world's third largest country, with an area of 3.7 million square miles, is the world's second largest agricultural producing country after the United States. Communist China, with only 7.8% of the world's cultivated area, supports almost one-fourth of the world's population.

b. This unfavorable population-land balance, which provides less than 0.4 acre of cultivated land per person, has been a major deterrent to the country's economic progress. Between 80% and 85% of the population are engaged in farming, and agriculture currently supplies one-third to one-half of the national income. Agriculture also supplies the bulk of the raw material base. Farm products and the finished agricultural products constitute 60% to 70% of total exports.

c. During the first decade of Communist rule, gains in agricultural production were registered almost every year. Then 4 years of devastating reverses in agriculture, because of the reckless adventure of the Great Leap Forward (1958-60) and unfavorable weather during 1959-61, dropped farm output to a dangerously low level and resulted in a near collapse of the economy.

d. Under the guise of central planning during the Great Leap Forward, officials had ignored traditional farming culture--thereby badly upsetting one of the most intricate farming systems in history. Because of the successive crop reverses, the regime beat a hasty retreat and announced a new policy of giving priority to agriculture. Since that time, gains have occurred in numerous industries designated to support agriculture.

e. Although sufficient justification exists for official claims that the current level of food consumption exceeds that of the 1959-61 period, agricultural production in the socialist sector has failed to make a net per capita gain since 1964, and remains substantially below levels of production achieved before the Great Leap Forward. Large imports of grain and substantial production increases on private plots of land account for most of the increased consumption since 1961. On socialist farms, the production of food crops in 1966 failed to meet consumer needs for the eighth consecutive year.

f. Although exports of agricultural commodities have increased significantly since 1962, they apparently have not regained the 1959 level. Thus, almost a decade after the Great Leap Forward that was to solve China's economic problems within a few years, the country's agriculture is still in a state of stagnation. As one authority observed, "It may turn out that the Great Leap Forward will have cost the Chinese economy roughly a decade of growth."

28. (U) Major Crops (U)

Rice is by far the most important crop in Communist China. The production of rice is more than three times that of all the other major crops

combined; wheat is next in acreage and production. Other principal crops are soybeans, peanuts, rapeseed, and cotton. Acreage and production figures of the major crops grown in Communist China are listed in table III.

Table III. Acreage and Production of Major Crops in Communist China (U).

Crops	Acres	Production (tons)
Rice	---	91,800,000
Wheat	62,114,000	22,927,000
Soybeans	20,433,000	8,100,000
Peanuts	4,339,000	2,209,000
Rapeseed	2,830,000	965,000
Cotton	10,950,000	1,241,000

(UNCLASSIFIED)

29. ~~(C)~~ R&D Against Naturally Occurring Crop Pests and Anticrop Warfare Agents (U)

(b)(1),.

b. (U) Research on Rice Diseases and Insects. Since rice is the most important source of food in Communist China, its diseases would be expected to receive the greatest attention of ChiCom scientists. This opinion seems to have no basis in fact, however, since the rust diseases of wheat apparently are the object of much more research.

(1) (U) Investigations on rice diseases. Rice blast is a serious disease in Communist China, especially in the northeast, but only one article since the beginning of 1965--concerning the application of kasugamycin, a Japanese antibiotic, for the control of rice blast--has been noted in a Chinese Communist publication.[156] The study on which the article was based was conducted by a Japanese scientist. During the same time period, three papers on other rice diseases appeared:

(a) (U) The Mycelial Activities of the Rice Sheath Blight Fungus in Relation to the Disease Development;[157]

(b) (U) Studies on the Spore Dispersal of Helminthosporium oryzae;[158]

(c) (U) Field Control of Bacterial Leaf Streak (Xanthomonas oryzicola) of Rice in Kwangtung.[159]

(2) (U) Rice insects. The following two papers on rice insects have been noted; both concern research on the control of the paddy borer:

(a) (U) Outbreak, Rhythm, and Control Technique of Paddy Borer (Tryporyza incertellus Walker) in Huang, Hsin, Hsi, and Demonstration Regions in Hopeh Province;[160]

(b) (U) Forecasting the Third Generation Paddy Borer (Tryporyza incertellus Walker) and Chemical Control Techniques.[161]

c. (U) Research on Wheat Disease and Insects. (U)

(1) (U) Races of wheat stem rust. The physiological races of the fungus causing stem rust of wheat were analyzed in 1964. Stem rust was epiphytotic in all areas of China in 1964, being generally more serious in the north than in the south. In 1964 a total of 2835 samples of stem rust spores was collected from 229 cities and districts within 26 provinces; 2006 of them have been identified. The identifications were conducted from November 1964 to March 1965 according to the usual international procedure and rules. The races and types found were: 17, 19, 21, 21C1, 21C2, 21C3, 34, 34C1, 34C2, 40, and 194. The predominance of race 21 has

been gradually decreasing, whereas race 34 has been increasing in occurrence, as seen from the analyses of the physiological races found from 1962 to 1964. This survey was conducted by personnel from the Mukden Agricultural College, Heilungkiang Agricultural Research Institute, and the Kirin Agricultural Research Institute, all in Northeast China.[162]

(2) (U) Control of wheat diseases. Four effective means of stripe rust control have been developed in China: (a) breeding of rust-resistant varieties, (b) postponing the sowing time from 100 days to 80 days before the winter solstice, (c) destroying disease-infested plants, and (d) applying fungicides like sodium fluorosilicate and sulfanilamide.[163] According to available statistics, 6 million acres were sown with about 100 varieties of good rust resistant strains of wheat in Shansi, Hopeh, Shantung, Honan, Shensi, Kansu, and Northern Kiangsu in the autumn of 1964.[164] The variety Nei-hsiang 36 was reported to be immune to stripe rust but susceptible to leaf and stem rusts. A second variety, Hopeh Agriculture University 3, is almost immune to stripe rust and is resistant to stem rust, while a third variety, Hsu-chou 4, is almost immune to all three types of rust.[165]

(3) (U) Development of chemical rust fungicides. Sulfonic acid, a systemic fungicide against wheat rust, has been tested in the field. The optimum concentration found was 6.5 to 13 pounds of 65% acid per acre. Methods for producing the acid have been developed.[166,167]

(4) (U) Development of antibiotic fungicides. During 1965, seven papers were published on antibiotic fungicides. All but one concerned the fungicide "Nung-K'ang-101," and isocycloheximide isolated from Streptomyces aureus, by the Pharmacology Institute, Chinese Academy of Sciences, Shanghai. Nung-K'ang-101 was tested and found to be effective against wheat rust and Gibberella disease of wheat.[168-174]

(5) (U) Research on control of wheat insect pests. The oriental army worm, Leucania separata Walker, is the pest most destructive of cereal crops in Kirin Province, Northeast China. Studies have been conducted on its life history and the effects of microclimate on its population density. The wheat stem fly, Meromyza saltatrix Linn, is a serious pest of wheat in Shensi. Differences in varietal susceptibility have been noted; plants growing in fertile soils sustain less injury. Benzene hexachloride (BHC) or parathion provide very effective control of the adult fly. One paper describes the development of the aphid Macrosiphum granarium--the chief wheat pest in the province of Hsi-Nan.[175-179]

d. (U) Research on Soybean Diseases and Pests. Although the soybean is a major crop in Communist China, research on its diseases and pests is sketchy. Only three papers have been noted: one on the analysis of the soybean mosaic virus, and two on the soybean pod porer. The latter is a serious pest of soybeans in Northeast China. Recommended control methods are the use of resistant varieties of soybean, proper cultural practices, and insecticides like BHC together with DDT.[180-182]

e. (U) Research on Rape Disease and Pests. The Institute of Microbiology has conducted an intensive study of the rape mosaic viruses. The Chinese Communists have identified and characterized 40 strains of the virus. A partial purification of the virus has been accomplished, and its properties have been described. Another institute has studied the epidemic relations between the vector aphid, Myzus persicae Salz, and the virus.[183-185]

f. (U) Research on Cotton Disease and Pests. Analysis of the published research papers indicates that the principal diseases and insects of cotton are: fusarium wilt, verticillium wilt, and pink bollworm. Stopping the spread of fusarium wilt and verticillium wilt appears to be the principal difficulty. Use of BHC and DDT is recommended to control the bollworm.[186-188]

g. (U) Insect Pest Control Research. (U)

(1) (U) Chemosterilants. Two forestry institutes have been investigating the use of the chemosterilants to control Dendrolimus punctatus Walker, Bombyx mori, and other insects. Chemosterilants selected experimentally included Thio-TEPA, 5-fluorouracil, 5-fluorourotic acid, colchicine, nitrogen mustards, and thiocarbamide. The effects of the various chemosterilants on the different insects were described.[189-192]

(2) (U) Organic insecticides. Research on chemical insecticides in Communist China appears to concern chiefly the testing of Western-developed organophosphorus and organochloro insecticides on Chinese crops. The development of synthetic processes for producing the desired insecticides for Chinese crops also is of concern.

(3) (U) Biological control. Spores of the bacteria B. bassiana and B. thuringiensis are used to control such insects as D. punctatus Walker, the pine caterpillar Grapholithe glycinivosella, and Cylas formicarius. Applications of the insect fungus, Spicaria fumoso-rosea, have been considered for the control of a wide range of insects, including L. separata Walker and Pyrausta nubilalis Huebner. The use of Chinese bees and the insect Trichogramma australicum to control the sugar cane borer has been investigated and has produced satisfactory results.[193-196]

(b)(1),(b)(3):50 USC 403-1(i),.

(b)(1),(b)(3):50 USC 403-1(i),.

(b)(1),(b)(3):50 USC 403-1(i),.

(b)(1),(b)(3):50 USC 403-1(i),.

Section II.

NORTH VIETNAM

A. INTRODUCTION (U)

1. (~~C~~) Historical Background and Competence in Microbiology (U)

(b)(1),.

b. (U) When the Communists assumed control of North Vietnam in 1954, there was no central public health group capable of effectively instructing the people and instituting disease control procedures. Modern sanitation and public health facilities were essentially nonexistant. A Ministry of Public Health on the pattern of Communist China was established in Hanoi that year. The health organization extends down to interzonal and provincial levels, each having its own hospital or health center, along with its own medical and provincial administrators.[203] Little attempt was made to control scientific activities until 1958 when the State Science Committee was formed to aid the government in the organization and direction of scientific activities.[204] In 1960, the first attempt was made to draft a comprehensive scientific and technical program which evidenced the attempt to plan for the orderly development of scientific effort by the State Science Committee.[205] (b)(3):50 USC 403 (g),.

(b)(3):50 USC 403 (g),.

Since 1965, eastern European countries have significantly increased assistance to North Vietnam in the medical field, including construction of new hospitals and medical facilities, most of which probably serve military needs.

2. (U) Geographical and Political Factors (U)

a. North Vietnam lies in the northeastern part of the Indochina Peninsula, bordering the Gulf of Tonkin. This relatively small and irregular shaped country narrows from a maximum width of 375 miles in the north to about 30 miles in the south. The maximum north-south axis is about 450 miles. Its size approximates that of the State of Washington. The population of about 18.5 million is chiefly concentrated in the Red River Delta and along the coastal plains. Of the 1850 miles of land boundaries, about 800 miles borders on Communist China and about 1000 miles on Laos. There are two routes into North Vietnam from Communist China, both served by a road and a railroad. Two selected routes from Laos contain a road suitable for vehicular movement, but are poor access routes because of the mountainous terrain and inferior roads. The best air approaches are from the east, over the South China Sea.

b. The DRV Government is a highly centralized structure paralleled by the Lao Dong (Communist Party) organization, composed of more than half a million members. Civil obedience is maintained by an elaborate police and security service backed up by the military service. The economy is tightly controlled and the people are held to an austere level of living. North Vietnam's position in the Communist World was greatly enhanced by the personal stature of Ho Chi Minh. The Soviet Union and Communist China have each actively sought the support of the DRV in their contention for leadership in the Communist world. This has been done partly by making competitive grants of both military and economic assistance. North Vietnam, although heavily dependent on the larger and more advanced Communist countries for military and economic aid, has remained largely independent in the formulation of its domestic and foreign policies. The DRV controls its own territory through the usual Communist machinery and methods. (b)(3):50 USC 403 (g),.

c. The government structure was substantially reorganized in 1960. A new constitution was promulgated for further centralization and for an elected National Assembly. The constitution was modeled extensively on the Chinese constitution and serves as an organic law for the government as well as a propaganda document for the Lao Dong. Like all Communist constitutions, it ascribes considerably more responsibility and authority to the governmental organization than exists in actual practice. The most important centers of power within the government are the executive agencies--the President of the Republic; the Premier; the Council of Ministers; and the administrative committees of the local governments. The Council of Ministers is the organization closest to the policy making process, and the most important ministries of the Council are the Ministries of National Defense, Foreign Affairs and Public Security. Each of these Ministries is headed by Politburo members. The Communist regime has continued to reshuffle local government organizations and generally has developed a unified, nationwide system of local administration, dominated by Lao Dong Party members. (b)(3):50 USC 403 (g),.

B. ASSESSMENT (U)

3. ~~(c)~~ Order of Battle (U)

a. The High Command of the North Vietnamese Armed Forces consists of the Commander in Chief and his Staff. The Commander in Chief, who is also the Minister of National Defense (MND), is responsible to the head of state, and also answers to the Supreme Military Affairs Committee of the Communist Party's Politburo. However, Giap, the current Commander in Chief and Minister of National Defense, is a member of both the Politburo and the Supreme Military Affairs Committee. Operational and administrative command is affected through the General Staff of the High Command. Major commands under the MND include the Navy, the Air Force/ Air Defense, and the Artillery, Engineer, Armored, Sapper, and Transportation Commands. No known staff organization is responsible for BW in the National Defense Ministry. Chemical units, which probably would have a limited BW defense mission, may be subordinate either to the General Staff Department or to the Military Science or Military Technology Bureaus of the General Directorate of the Rear Services.[207,208] In 1958 the North Vietnamese Army (NVA) organized a chemical branch whose members wore distinctive insignia. This branch included chemical staff officers and staff sections assigned down to regimental level. These units were organized, trained, and equipped for defense against CBR operations.

b. NVA infantry divisions normally have a chemical company assigned, and infantry and armored regiments have chemical platoons authorized. (b)(1),. chemical

battalions are assigned to NVA division in South Vietnam. These battalions allegedly use flamethrowers and defend against US chemical operations. According to numerous reports, a number of smaller chemical defense units are in South Vietnam. The Viet Cong have counterchemical agent committees at the province and district levels to initiate countermeasures against US toxic chemical agents; however, no offensive BW missions have been reported.

c. National and perhaps regional chemical schools are believed to exist in North Vietnam. Students at these courses are apparently given rudimentary training in the characteristics of biological warfare. Principles of BW have reportedly been taught at the Ha Dong Military School.[13,207] Specialists in CW receive considerable training in standard combat techniques, including long, forced marches and weapons firing. In addition to instruction in the offensive use of nontoxic chemical weapons and defense against chemical weapons, CW specialists receive a slight amount of training in BW characteristics and defense techniques. Most NVA soldiers are taught the fundamentals of BW defense either in basic training or in unit training. They are instructed to put on a gas mask immediately, if one is available, when they are subjected to a CBR attack, and to continue their mission. If the soldier has no mask, he is to sit with his back to the wind, or lie down, and cover his head and body with a nylon poncho. Some are also told to cover their mouth with a damp cloth. Basic hygiene and preventive medicine are also taught, but not necessarily in connection with BW instruction. There is no evidence of offensive BW instruction.[209-217] Assignments to schools and duty positions are based on individual political qualifications and professional abilities.[207]

4. ~~(C)~~ Doctrine and Procedures (U)

a. Offense. The North Vietnamese frequently smear human excrement on stakes and place them in booby traps. Infection resulting from a wound incurred from such a trap could be considered a form of biological warfare. No other North Vietnamese plans, programs, or doctrine for the use of BW are known. A possible use of BW occurred in South Vietnam in 1967. Some remote evidence indicated that outbreaks of pneumonia in widely separated areas of South Vietnam could have been caused by a BW weapon. Several of the pneumonia victims were found also to be infected with Pasturella pestis (plague bacteria) although none was suffering from the bubonic form of plague. The bubonic form usually occurs first as the result of bites of infected fleas; the pneumonia stage may then develop which allows person-to-person transmission of the disease. Since the bubonic form was missing in this occurrence, the possibility was suggested that some artificial means of dissemination may have been used.[13]

b. Defense (U).

(b)(1),(b)(3):50 USC 403 (g),.

(2) North Vietnam's disease pattern is characterized by high incidence of communicable and degenerative diseases. Disease control programs range from fair to poor throughout the country, except in Haiphong and Hanoi where they are rated good. Environmental factors contributing to the incidence of communicable diseases are malnutrition, unsanitary living conditions, polluted water supplies, and the tropical monsoon climate. Other factors, such as shortages of medical and paramedical personnel and medical facilities, abundance of disease vectors, ignorance of basic hygiene practices, superstitions, and unsanitary food handling affect the health of the population.[281]

(3) Immunization programs are conducted throughout the country under the responsibility of the Ministry of Public Health which provides the medical and paramedical personnel and the sera and vaccines for immunization against smallpox, poliomyelitis, diptheria, whooping cough, plague, cholera, tetanus, and typhoid fever. However, in spite of the programs, a large number of diseases continue to occur in endemic as well as epidemic proportions.

5. ~~(C)~~ BW Equipment (U)

a. The only known NVA weapons involving the use of anything approaching the category of biological agents--human excrement placed on spikes in booby traps--are produced in the field by combat units.[207]

b. Gas masks of Soviet and Chinese Communist origin are furnished to some NVA personnel. Soviet masks include the ShM-1. Gas masks, made of nylon, are locally produced in North Vietnam. Their filters contain sugarcane charcoal mixed with soap and wrapped in silk. The filters must be moistened prior to use. Soviet protective clothing supplied to the NVA includes a chemically-treated, 4-1/2- by 3-foot sheet for covering the body, and a bag for covering the head. These outfits are made of nylon and are used to protect the individual from poisonous gases sprayed

from the air or present in a contaminated area. The outfit is always worn with a protective mask. Another Soviet-produced item is a three-piece rubber suit: hooded coat, combined pants and shoes, and gloves. It too, is to be worn with the protective mask.

c. Personal decontamination packets used by the NVA are North Vietnamese-produced. These kits contain a bar of soap, a bottle of liquid soap, a glass vial containing a 0.5 gram of potassium permanganate, and cotton. Field bathing and clothing decontamination facilities are provided by the Soviet decontamination truck DDA-53A. The Soviet decontamination truck ARS-12D is used for decontaminating weapons, vehicles, and other equipment, as well as for decontaminating roads and terrain. It may also be used as a fire truck or tank truck.

6. ~~(C)~~ Production and Stockpiling (U)

a. There is no known production or stockpiling of BW agents or munitions. Medical laboratories and pharmaceutical plants conceivably could be converted to produce agents (appendix II, annex A, B).

b. North Vietnam lacks a capability to produce significant types and quantities of BW defensive materiel. Unknown quantities of domestically produced decontamination kits[221] and improvised masks[222] are known to be available to Communist forces in South Vietnam. Some production of pharmaceuticals has been reported, however, quantities are not believed to be sufficient for domestic requirements. Most BW defensive materiel used by North Vietnam Army/Viet Cong (NVA/VC) guerillas are imported from the USSR and Communist China. Such items include the Chinese PK-1[223,224] and the Soviet ShM-1[225-227] and Model K protective masks;[228] Soviet MO-2 and MO-4 and Chinese Model 66 filter canisters;[223,225,227] Soviet protective clothing;[224,229,230] individual decontamination kits;[231,232] Chinese portable decontamination devices;[233,234] at least two DDA and ARS-12 Soviet decontamination vehicles;[235] and unknown quantities of vaccines, antibiotics, and sera. There is no evidence that there is any significant accumulation of any BW defensive items.

c. The North Vietnamese Army has a limited medical research and development program. Research on communicable and non-communicable diseases occurring in the armed forces is done by the three Health and Sanitation Groups subordinate to the Hygiene Office, Medical Bureau, General Directorate for Rear Services. Emphasis is placed on preventive medicine.[73]

7. ~~(C)~~ Research, Development, and Testing (U)

a. There is no evidence to indicate that the North Vietnamese are engaged in biological warfare preparations. There are research facilities, and pharmaceutical plants that have scientific personnel and equipment necessary to conduct agent research and development, but any such effort would be limited.

(b)(1),(b)(3):50 USC 403 (g),.

c. The Ministry of Public Health (MPH) was established in 1945. The MPH is responsible for all medical facilities in Vietnam including hospitals, dispensaries, and medical research facilities. The organization of the MPH includes the Treatment Section, the Preventive Medicine Section, the Training Section, the Medical Offices for cities and provinces, the Central Hospital Facility, and the Pharmacy Section.[239] Immunization programs have included vaccination against smallpox, cholera, typhoid fever, typhus, dysentery, measles, plague, diptheria, and tetanus. Epidemics caused by dengue and chikungunya viruses occurred in 1969 and are under study primarily at hospital laboratories.[240]

d. The Hygiene and Epidemiology Institute, MPH, Hanoi was formed in 1961 to prevent and control epidemics, and to train hygiene and epidemiological workers.[241] Studies concerning cholera, dengue, typhoid and paratyphoid fevers, louse-borne typhus, scrub typhus, and plague have been conducted. These studies are primarily directed toward the improvement of public health conditions, but also could have an application in a BW program.

e. (b)(1),(b)(3):50 USC 403 (g),. Although some pharmaceuticals are produced locally, most are prepared from raw materials imported primarily from the USSR and Communist China. It is apparent that the North Vietnamese are limited in research and production capabilities, however, their competence for handling infectious diseases is improving.

8. ~~(C)~~ Conclusions (U)

a. Offensive Posture (U). North Vietnam has little technical competence to support the production of BW agents, munitions, and materiel. No facilities are known to conduct research related to biological warfare which, if undertaken, would probably be limited to clandestine activities. Any program of sophistication would most likely be conducted under the direction and guidance of the USSR or the People's Republic of China. Agencies which could be responsible for planning and executing a biological warfare program are the National Defense Council, the Vietnam Association for Dissemination of Science and Technology, the Vietnam People's Army, and the Ministry of Public Health.

b. Defensive Posture (U). Propaganda reports (b)(1),. (b)(1),. indicate that North Vietnam is aware of the implications of biological warfare but evidence of a BW defense program is lacking. Defensive measures are not extensive, little equipment is issued, training is slight, and the preventive medicine program is meager. North Vietnam has been heavily dependent upon the USSR and the PRC for defensive equipment and supplies, including vaccines and pharmaceuticals.

9. ~~(C)~~ Trends and Forecasts (U)

a. Trends (U). Although the North Vietnamese attempt to remain independent of both the Soviet Union and the PRC in domestic matters, they must rely heavily on these two countries to supply many of their medical needs. Facilities for microbiological research, which have been very limited, appear to have become more proficient in diagnosing diseases and in conducting research on these organisms. Major research requirements must be met by soliciting outside aid. Medical capabilities are developing slowly; but until the war in Vietnam is settled, sufficient resources cannot be allocated to accomplish great advances in the medical and public health fields. The North Vietnamese continue to depend upon

imports of raw materials for making necessary pharmaceuticals. Expertise in isolating and identifying disease organisms is increasing, and some advances are being made in the development of sera, vaccines, and antibiotics. Capability to produce quantities of agent materiel will increase in proportion to their ability to produce vaccines, but will remain severely limited.

b. Forecasts (U).

(1) Short-Range (5-Year Projection) (U). The North Vietnamese will continue to emphasize the diagnosis and treatment of endemic diseases, particularly those affecting military operations. Efforts will be made to obtain the knowledge necessary to propogate viruses for the development of vaccines, and ultimately for their production. Even if the war in Vietnam ceases, however, capabilities for production of infectious agents will not increase significantly during this period.

(2) Mid-Range (5-10 Year Projection). (U) If present conditions continue, microbiological facilities in North Vietnam will remain antiquated and inadequate without extensive foreign support. If peaceful conditions exist, the North Vietnamese will initiate plans for building a solid scientific base. Existing facilities will be modernized and foreign exchange programs will be increased to obtain qualified scientists. Increased production of antibiotics and vaccines will result, but imported materials will remain an important part of their public health program.

(3) Long-Range (10-15 Year Projection). (U) A production capability will have developed to the extent that the common antibiotics and vaccines can be supplied by local facilities. The North Vietnamese will have mastered the techniques and procedures for handling infectious viral materials to include production of some viral vaccines. Capabilities for production of biological agent materiel, however, will still be limited. Satisfactory techniques for diagnosing and identifying disease organisms will exist, but these will not be automated.

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Section III.

NORTH KOREA

A. INTRODUCTION (U)

1. ~~(C)~~ Historical Background and Competence in Microbiology (U)

(b)(1),.

2. (U) Geographical and Political Factors (U)

a. North Korea is a rugged land which occupies the northern part of the Korean peninsula between the Yellow Sea on the west and the Sea of Japan on the east. It adjoins Communist China and the USSR on the north and South Korea on the south. North Korea has an area of about 47,000 square miles, or approximately the size of Pennsylvania. Because

of the rugged mountainous terrain, North Korea is poorly suited for ground or air operations. Pyongyang is the political, commercial, and cultural center of the country. The Hamhung-Wonsan area is the largest industrial center and includes nonferrous metal plants, chemical works, a munition plant, and an industrial machinery plant. There are also army and navy installations in the area.[245]

b. North Korea is a Communist party state dominated by a closely knit clique under Premier Kim Il-song. Occupation of the northern part of the country by the USSR in 1945 set conditions for the political development, and the presence of Soviet military guaranteed its direction. Initially a figurehead under Soviet direction, Kim has moved to consolidate his position by eliminating rivals and has sought to establish independence from both the USSR and Communist China. The strongest priority of the regime is directed toward the reunification of Korea. An aggressive policy on reunification was pronounced at a Labor Party Conference in October 1966. Propaganda campaigns were reinforced with incidents created along the demilitarized zone and terrorist attacks throughout South Korea. Another strong objective of the regime is to enhance North Korea's international position. Almost all domestic policies are integrated to establish a highly integrated, self-supporting economy under state control. Some progress has been made in this direction, but North Korea has not attained economic and scientific self-sufficiency. Very limited scientific effort could be diverted into a biological warfare program. (b)(3):50 USC 403 (g),.

(b)(3):50 USC 403-1(i),.

B. ASSESSMENT (U)

3. (~~TS~~ [redacted] ~~NFD~~) Order of Battle (U)

(b)(1),.

[redacted]

(b)(1),(b)(3):18 USC 798,(b)(3):50 USC 403,(b)(3):50 USC 403-1(i),(b)(3):P.L. 86-36,.

(b)(1),.

5. ~~(C)~~ BW Equipment (U)

(b)(1),.

(b)(1),.

6. ~~(C)~~ Production and Stockpiling (U)

(b)(1),.

(b)(1),.

7. ~~(C)~~ Research, Development, and Testing (U)

(b)(1),(b)(3):50 USC 403 (g),.

(b)(1),.

(b)(1),(b)(3):50 USC 403-1(i),.

8. ~~(C)~~ Conclusions (U)

(b)(1),.

9. ~~(c)~~ Trends and Forecasts (U)

(b)(1),.

b. Forecasts (U).

(1) Short-Range (5-Year Projection) (U). (b)(1),.

(2) Mid-Range (5-10 Year Projection) (U). (b)(1),.

(3) Long-Range (10-15 Year Projection) (U). (b)(1),.

[redacted]

Section IV.

THE MONGOLIAN PEOPLE'S REPUBLIC

A. INTRODUCTION (U)

1. ~~(C)~~ Historical Background and Competence in Microbiology (U)

a. (U) Prior to 1921 medical services in the Mongolian People's Republic were provided by Lamaists. In 1921 the Soviet army furnished medical aid to Mongolia's army, which resulted in the adoption of modern methods of health and sanitation throughout Mongolia. Additional advancements in public health services have occurred since the country asserted its independence in 1924. The Soviet Union has provided technical assistance in the development of health and sanitation programs and has helped to train medical personnel. Assistance is also provided by the United Nations organization and by the East European Communist Countries. With this aid, the public health standards have become comparable with those in most other Asian countries. Evidence does not show that any research in progress is associated with biological warfare programs.

(b)(1),.

2. (U) Geographical and Political Factors (U)

a. Mongolia's proximity to the Trans-Siberian railroad in the Soviet Union, and its position between the USSR and Communist China

lends it a unique strategic significance. It provides road and rail routes from the USSR to the coast of Communist China. The main strategic area is Ulan Bator, the capitol city. A single track railroad links Ulan Bator with the Trans-Siberian Railroad in Russia and extends southeast to connect with the Communist Chinese system at Erk-lien. Of Mongolia's boundaries, 2600 miles border Communist China and 1850 miles border the Soviet Union. Since tensions arose between the USSR and Communist China, Mongolia has been used as an advanced position for the Soviet Army. (b)(1),(b)(3):18 USC 798,(b)(3):50 USC 403,(b)(3):P.L. 86-36,. Geographically, Mongolia includes vast desert plains in the south and east, long mountain ranges in the west, and hills mountains with broad valleys in the north. The climate is continental with great daily and seasonal extremes of temperature.

b. The Mongolian People's Republic is governed by a Communist dictatorship which maintains control through a centralized system modeled on that of the USSR. The Politburo is the center of power and the source of all executive, legislative, and judicial authority in the country. Soviet influence dominates public health planning and activities in Mongolia. The USSR has provided technical assistance since 1925 in establishing a public health program, epidemiological systems, and laboratory facilities for investigating diseases. In 1931 the Soviet Union established at Ulan Bator the first antiplague laboratory which became the Central Antiplague Station in 1936. Prophylaxis is the basic philosophy in Mongolia, and all health care and medical research units are owned and maintained by the state. The Ministry of Public Health is responsible for all health and medical services. The political reliability and loyalty to the Communist party often outweigh qualities, professional skill, and ability in the selection of scientific administrators. For this reason the effectiveness of the public health services and the advancement of scientific programs are often hampered.[271]

B. ASSESSMENT (U)

3. ~~(C)~~ Order of Battle (U)

The Mongolian Army is reported to have chemical, biological, and radiological warfare units, but their characteristics cannot be determined. Officers presumably are trained at the Ulan Bator Military School and continue their education at Soviet military schools.[273]

4. (U) Doctrine and Procedures (U)

The Mongolians are not known to have policies or procedures for conducting biological warfare.

5. ~~(C NFD CD)~~ BW Equipment (U)

a. (U) The Mongolians do not have biological warfare agents or munitions. Some vaccines, antibiotics, and sera are available for defense.

(b)(1),(b)(3):50 USC 403 (g),.

6. ~~(C)~~ Production and Stockpiling (U)

No production or stockpiling of biological agents or munitions is known. Mongolia lacks the technology as well as the research and development facilities to support either an offensive program, or to produce significant quantities of defense related materiel. Some vaccines, antibiotics, and sera are produced, but quantities are not sufficient to meet domestic requirements. Manufacturers of medical materiel are shown in appendix IV.

7. ~~(C)~~ Research, Development, and Testing (U)

a. ~~(C)~~ Mongolia's limited capability to conduct biological research and development has been directed toward an improvement of public health practices and has made possible the production of some vaccines and therapeutic compounds in country. There is no apparent interest in the development of biological warfare agents, and efforts directed toward defense-related studies are not apparent.

b. (U) A Bacteriological Research Office was formed in 1932 by combining several small laboratories in Ulan Bator. This was the first facility under the Ministry of Health to conduct microbiological research. Diseases for which vaccines have been prepared at this facility include typhus, rabies, smallpox, dysentery, typhoid fever, and brucellosis.[274] A Soviet specialist, L. S. Rezninkova, assisted in directing research programs for the development of vaccines and medicines during the late 1950's.

c. (U) The Office for Studying and Combating Especially Dangerous Infectious Diseases which was an outgrowth of the Anti-Epidemic Office now has five substations under its jurisdiction. It is probably the largest Mongolian organization which supports studies of measures for preventing diseases, such as anthrax, glanders, plague, poliomyelitis, and tularemia. During 1966, the organization prepared and administered vaccines to an estimated 150,000 persons.[274]

(b)(1),.

8. ~~(C)~~ Conclusions (U)

a. Offensive Posture (U). Mongolia does not have the scientific and technical capability to conduct biological warfare research and development. A doctrine governing the offensive use of biological agents is not known to exist, nor has interest been expressed for their development. A capability to stockpile agent materiel would be negligible. The organization most likely to be made responsible for agent research would probably be the Office for Studying and Combatting Especially Dangerous Infectious Diseases.

b. Defensive Posture (U). The Mongolian Army reportedly has chemical, biological, and radiological warfare units which indicates an awareness of the need for protective measures. Specific army unit characteristics and troop training procedures are unknown. Officers who are trained at the Ulan Bator Military School and at Soviet military schools probably receive some instruction in CBR defense. Production of items potentially available for biological warfare defense is limited to small quantities of defense-related antibiotics, vaccines, and sera.

9. ~~(C)~~ Trends and Forecasts (U)

a. Trends (U). The standards of medical science and medical services throughout Mongolia are low. Technological facilities and well-trained scientists necessary for rapid advancement in public health do not exist. Mongolia devotes its available resources to the improvement of public health and sanitation measures. Great dependence is placed on foreign assistance for eradication of diseases and for training personnel.

b. Forecasts (U).

(1) Short-Range (5-Year Projection) (U). Efforts expended in public health and sanitation will cause little change in Mongolia's ability to conduct science and technology. The eradication of endemic diseases will continue to occupy available resources. Foreign aid furnished through such organizations as the Council for Mutual Economics Assistance (CEMA) and The World Health Organization (WHO) and direct aid from the USSR, will continue to provide the best basis for disease eradication and training of scientific personnel. If Soviet forces stationed in Mongolia demonstrate concern for protection against biological agent attack, the Mongolians may accelerate programs for procuring equipment and for training.

(2) Mid-Range (5-10 Year Projection) (U). With foreign assistance, some diseases such as brucellosis and glanders will be brought under control. Technical personnel trained abroad and those trained by foreign specialists in Mongolia will enhance the country's ability to conduct epidemiological surveys and to perform classical laboratory investigations. Reorganization of public health administration will enable more proficient operation. Scientific and technical capabilities will not be sufficiently advanced to permit either offensive or defensive biological research.

(3) Long-Range (10-15 Year Projection) (U). Applied research on microorganisms causing diseases will be impelemnted to develop vaccines. Capabilities for the production of vaccines and antibiotics will improve; nevertheless, major supplies will be imported. Inroads toward the

solution of public health deficiencies will be made, but many problem areas will remain. Those portions of the S&T base that could be diverted into a biological warfare program will be totally occupied with medical care and public health.

APPENDIX I.

SELECTED MEDICAL MATERIEL MANUFACTURERS AND

MEDICAL LABORATORIES, COMMUNIST CHINA (1971) (U)

Annexes — Page

A. Manufacturers of Medical Materiel (U) ---------- 77

B. Medical Laboratories (U) ---------- 83

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APPENDIX II.

SELECTED MEDICAL MATERIEL MANUFACTURERS AND MEDICAL LABORATORIES, NORTH VIETNAM (1971) (U)

Annexes

Page

A. Manufacturers of Medical Materiel (U) ---------- 103

B. Medical Laboratories (U) ---------- 107

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APPENDIX III.

SELECTED MEDICAL MATERIEL MANUFACTURERS AND MEDICAL LABORATORIES, NORTH KOREA (1971) (U)

Annexes — Page

A. Manufacturers of Medical Materiel (U) ---------- 113

B. Medical Laboratories (U) ---------- 115

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13. ABSTRACT

The purpose of this study is to consolidate all available information concerning the many facets of biological warfare activities in the Asian Communist Countries and to determine their biological warfare capability. (U)

Sources of information included information reports, intelligence publications, abstract publications, and available open scientific literature. The information relating to biological warfare was collated and analyzed. The study has been organized under the following topics: order of battle for BW; BW materiel (offensive and defensive); production facilities and capabilities; stockpiles and storage facilities; doctrine and procedures governing use of BW weapons; doctrine and procedures for defense against BW; BW research, development and testing; anticrop research. (U)

Sufficient historical material has been presented to provide a background for the investigation and analysis of current BW or related activity in these countries. (U)

14 KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Biological warfare						
Order of battle for biological warfare						
Biological warfare materiel						
Biological warfare doctrine						
Biological warfare procedures						
Biological warfare development programs						
Biological warfare agents						
Decontamination						
Agent prophylaxis						
Disease therapy						
Biological warfare protective clothing						
Biomedical research institutes						
Aerosol						
Vaccine						
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13. ABSTRACT

This amendment brings up to date the available information concerning biological warfare preparations and capabilities in the Asian Communist Countries. (U)

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