

SOVIET CAPABILITIES FOR CLANDESTINE ATTACK AGAINST THE US WITH WEAPONS OF MASS DESTRUCTION

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SOVIET CAPABILITIES FOR CLANDESTINE ATTACK
AGAINST THE US WITH WEAPONS OF MASS
DESTRUCTION AND THE VULNERABILITY
OF THE US TO SUCH ATTACK
(mid-1951 to mid-1952)



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The intelligence organizations of the Departments of State, the Army, the Navy, the Air Force, the Joint Staff, the Federal Bureau of Investigation, the Atomic Energy Commission, and representatives of the Coast Guard, the Department of Agriculture, the Bureau of Customs, and the Public Health Service participated in the preparation of this estimate. All members of the Intelligence Advisory Committee concurred in this estimate on 30 August.

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SOVIET CAPABILITIES FOR CLANDESTINE ATTACK AGAINST THE US WITH WEAPONS OF MASS DESTRUCTION AND THE VULNERABILITY OF THE US TO SUCH ATTACK (MID-1951 TO MID-1952)

THE PROBLEM

To estimate for the period mid-1951 to mid-1952 the vulnerability of the US to Soviet clandestine attack¹ with weapons of mass destruction² prior to or concurrent with the outbreak of hostilities on the basis of Soviet capabilities for such attack and US capabilities³ for detecting and preventing an attack.

CONCLUSIONS

1. The Soviets have substantial capabilities for the employment of atomic, chemical, and biological weapons for clandestine attack upon the continental US.
 - a. The most likely method of attack, because the most feasible and potentially most effective, would be the use of disguised TU-4 aircraft to deliver atomic weapons to a number of targets simultaneously as the initial act of general hostilities.
 - b. The delivery of atomic weapons into key harbors by merchant ships is feasible and therefore constitutes a serious threat.
 - c. Smuggling of atomic weapons into the US under cover of diplomatic immunity, or in the guise of commercial shipments, or by landing at some secluded spot is also feasible. However, such operations are relatively unlikely because of their complexity and the number of individuals involved.
 - d. The launching of guided missiles with atomic warheads from merchant
2. The US is vulnerable to such clandestine attack because existing and presently planned security measures do not provide adequate assurance that certain methods of clandestine attack would be detected and prevented.
3. In a clandestine attack on the US the USSR would probably attempt simultaneous delivery of a number of atomic weapons, possibly by several methods.

¹For the purpose of this estimate, the term "clandestine attack" does not include either surprise attack by undisguised military forces or the employment of conventional sabotage.

²The term "weapons of mass destruction" is limited to atomic, chemical, and biological weapons, since the state of development of other conceivable weapons of mass destruction is such that their employment during the next year is most unlikely.

³In analyzing US defensive capabilities against clandestine attack, this estimate considers only those security measures that have been initiated or are in prospect.

ships or submarines against near-coastal targets is a possibility.

4. The only method of clandestine attack with chemical warfare agents likely to be employed by the USSR is the smuggling of limited quantities of nerve gas into the US for dissemination against personnel in key installations. The possibility of small-scale nerve gas attacks cannot be overlooked.

5. The USSR might employ biological warfare (BW) agents against personnel

in key installations well in advance of D-Day. Attacks against livestock and crops with dangerous diseases like foot and mouth disease and cereal rusts are a possibility at any time.

6. It is believed likely that in clandestine attack the USSR would employ those methods not requiring pre-D-Day preparations in the US, since such methods entail the least risk of loss of strategic surprise.

DISCUSSION

7. In its struggle with the non-Soviet world, the USSR will have no scruples about employing any weapon or tactic which promises success in terms of over-all Soviet objectives. Clandestine attack with atomic, chemical, and biological weapons offers a high potential of effectiveness against a limited number of targets, particularly if employed concurrently with, or just prior to, the initiation of general hostilities. Hence, in planning an attack upon the US, the USSR would undoubtedly consider clandestine employment of the various weapons of mass destruction available to them.

8. Clandestine attack upon the US with weapons of mass destruction would be part of Soviet over-all war plans, and (with the possible exception of the use of BW agents) would be undertaken only after the USSR had decided it was prepared to become involved in a general war with the US.

9. Biological warfare probably, and chemical warfare possibly, could be employed without detection prior to open war, but if detected and identified as clandestine attack prior to D-Day they would cost the USSR loss of strategic surprise. It is doubtful whether the USSR would attempt any operations which might be detected and identified sufficiently in advance of H-Hour to cause a significant loss of strategic surprise.

10. To a considerable extent, the success with which the USSR could employ methods of attack requiring either the infiltration of personnel immediately prior to attack or the creation of a Soviet sabotage organization in the US is governed by the ability of American agencies, both abroad and in the US, to identify potential saboteurs and prevent their entry into the US, as well as to keep under surveillance and control such activities in the US. The chief obstacles to these security measures are:

- a. The difficulty of identifying Soviet subversive personnel abroad.
- b. The impossibility of preventing the entry of all such personnel into the US.
- c. The difficulty of imposing complete surveillance on subversive personnel or preventing all clandestine operations.
- d. The possible existence in the US of a Soviet "sleeper" organization, the members of which are unidentified.

11. In general, it would be more difficult to prevent Soviet employment of those methods of clandestine delivery which do not require the assistance of personnel within the US. Prevention requires not only detection and identification abroad and at home, but also instant and effective counteraction.

12. US capabilities for detection, identification, and prevention of clandestine delivery

will be short of satisfactory even in mid-1952. However, current capabilities are not insignificant and will continue to increase as presently anticipated internal security programs are implemented. In determining the methods of clandestine attack which the USSR would be most likely to employ, it must be assumed that the USSR is aware of US defensive measures against clandestine operations.

Clandestine Attack With Atomic Weapons

Atomic Weapons Available to the USSR

13. It is estimated that the USSR will have a stockpile of 45 atomic weapons in mid-1951 and 100 weapons in mid-1952. Part of this stockpile might be employed in a clandestine attack against the US.

14. Atomic weapons available to the USSR between now and mid-1952 can be expected to develop from 30 to 70 Kilotons TNT explosive power. Their weight would probably be between two and five tons; diameter three to five feet; and length four-and-a-half to seven-and-a-half feet (if a non-ballistic case is used the length is shortened to the diameter).

Methods of Clandestine Delivery Available to the USSR

15. The USSR is capable of the following methods of clandestine delivery of atomic weapons:

- a. by disguised aircraft;
- b. by merchant ships;
- c. by smuggling;
- d. by guided missiles.

Delivery by Disguised Aircraft

16. Because of its resemblance to the US B-29, the Soviet TU-4 could be disguised with US markings and employed for clandestine delivery of atomic bombs. Flying a one-way mission, the TU-4 has sufficient range to reach every important target in the US and the USSR has an adequate number of TU-4's and trained crews to perform such missions.

17. Present flight regulations of the Civil Aeronautics Administration and the military services require that both military and civilian aircraft follow a previously filed flight plan and enter the US by specified routes. Air-

craft violating these requirements, if detected by our radar screen or other means, are intercepted in flight by USAF fighters. Our radar screen now covers Alaska and the northeastern portion of the US, and is being extended to cover significant gaps.

18. A small number of disguised TU-4's, by taking advantage of the gaps in our radar screen, might escape detection. This would greatly increase the probability of a successful attack on high priority targets, such as the Washington area, for the purpose of paralyzing the top military and civil command a few hours prior to the initiation of hostilities elsewhere.

19. The USSR also could undertake clandestine attack with civilian aircraft of a type used by US or foreign transoceanic airlines. Such aircraft would have a greater chance of escaping detection and identification inasmuch as civilian aircraft are not equipped with IFF. However, employment of civilian aircraft is less probable since, at present, neither the USSR nor any of the Satellites are known to possess suitable aircraft, and acquisition from either a US or foreign concern would increase the risk of compromising the operation.

Delivery into Key Harbors by Merchant Ships

20. Atomic weapons may be laid as underwater mines in key harbors by merchant ships or may be detonated in the hold of the ship. This method is inherently difficult, if not impossible, to detect.

21. Laying an atomic weapon as a mine would require the encasing of the weapon in a watertight container and might also require special laying equipment. The USSR is capable of meeting these requirements as well as providing accurate time-delay actuating mechanisms to permit laying the weapon several days, weeks, or months in advance of D-Day.

22. Detonation of an atomic weapon in the hold of a ship does not involve any special engineering problems; nor need the crew be aware of the presence of the weapon. While an atomic weapon exploded in the hold of a ship might not be as effective as a deeper underwater burst, the damage as well as the

contamination from radioactive mist would still be great with attendant disruption of normal port activities.

23. The Coast Guard, within the limits of its present resources, has established a port security and smuggling prevention program, which includes:

- a. Waterside patrols in major ports.
- b. Active surveillance and boarding of fishing vessels and other small craft, particularly at harbor entrances.
- c. Part time patrol at entrance to ten major ports.
- d. Close cooperation with Customs and local pilots in halting and searching Soviet and Satellite merchant vessels.

24. As an additional measure, the Coast Guard anticipates early approval by the Department of State of a plan whereby the master of a vessel departing for the US could, if he so desired, file with the US consular agent at the last foreign port of call a certificate which would expedite the ship's entry into the US. This certificate would indicate the expected date of arrival in the US, the port of origin and ports of call, and a declaration by the master that, to the best of his knowledge, the ship carried no cargo other than that permitted by US law. It has been proposed that the Central Intelligence Agency coordinate this information and advise the Coast Guard. This procedure would simplify to some extent the control of unexpected merchant vessel arrivals and focus the attention of the Coast Guard on suspicious vessels even prior to their arrival.

25. There are certain factors which would seriously hamper the Coast Guard in detecting clandestine delivery:

- a. There is no device for detecting an atomic weapon within the hold of a merchant ship. The only certain method is complete unloading of the cargo followed by detailed inspection of the vessel and cargo.
- b. The USSR possesses a number of ocean-going fishing trawlers similar in type to US vessels and capable of transporting atomic weapons.
- c. During the first quarter of 1951, the Soviet orbit (including China, but excluding

Finland) had under charter more than 140 Western ships.* In addition, the chartering of Western ships often leads to their sale to Soviet-Satellite countries. Examination of a ship's papers is not always a reliable method of determining whether a ship is actually under Soviet control. Such control can be determined with reasonable certainty only with accurate and timely intelligence support.

(1) The Soviets enforce secrecy for their ship chartering by maintaining their own charter and insurance agencies which enable them to by-pass the usual commercial channels.

(2) In many instances, intelligence information indicating Soviet charter or purchase has not been received until more than sixty days after the transaction occurred. Therefore, it is within Soviet capabilities to obtain and employ a foreign ship for clandestine delivery before the US could learn that the ship was under Soviet control.

d. Finland is not included in the Coast Guard list of countries whose ships are to be inspected. However, a substantial part of Finnish shipping is thought to be under Communist control.

26. Because of the above factors, the USSR must be considered capable of utilizing a merchant ship for delivering an atomic weapon into a key US harbor with a relatively good chance of escaping detection.

Smuggling of Atomic Weapons

27. An atomic bomb, including the fissionable material, can be broken down into relatively small components which could be smuggled separately over a period of time into the US. The various components could be so packaged that unusual handling precautions would not be required and radiation detection would be most improbable. Assembly of the bomb would present certain difficulties but none of an insuperable character.

28. Although it would be theoretically possible to manufacture clandestinely within the

* These figures do not include the additional Western ships engaged in trade with the Soviet orbit but not under direct charter to the Soviet orbit.

US all the components of an atomic weapon with the exception of the fissionable material, it would be difficult to procure and process the necessary material. Therefore, it is unlikely that the USSR would attempt the manufacture of an atomic weapon within the US.

Smuggling under the Cover of Diplomatic Immunity

29. Under the cover of diplomatic immunity, components for an atomic bomb or, less probable, even an assembled bomb could be consigned to Soviet diplomatic representatives in the US as household effects or supplies without fear of official inspection by the Bureau of Customs. In addition, no government agency is specifically charged with the responsibility for observing the off-loading, processing, and disposition of such shipments.

30. This method would require the closely coordinated effort of several individuals in the US to receive the weapon and deliver it to the target area. It is unlikely that such an operation would be detected even by constant surveillance of official Soviet representatives in this country.

Smuggling as Commercial Shipments

31. It is feasible to smuggle an atomic bomb through customs as a commercial shipment, and many types of imports from the Satellites could be used as a "cover" for such an act. Furthermore, the number of importing firms in the US is so large that the appearance of a new firm or a change in the imports of an old firm would not automatically arouse the suspicion of the Customs authorities.

32. The Bureau of Customs is well aware of the possibility of attempted smuggling of a complete atomic bomb or its components. Customs inspectors have been alerted to watch for shipments of the weight and size characteristic of a bomb, and such shipments from countries within the Soviet orbit are particularly suspect. Although the Bureau of Customs is capable of detecting shipments of this type it would have considerable difficulty detecting bomb components.

33. Theoretically, there are numerous methods by which the USSR could circumvent cus-

toms inspection. For example, commercial shipments from abroad received at American ports and consigned to points other than the port of entry, are usually transhipped, without customs inspection, to a bonded carrier for transportation to destination. Customs inspection is made just prior to final delivery to the consignee, but "hijacking" or "switching" en route is possible. However, such methods would involve elaborate arrangements as well as the existence within the US of an efficient organization to establish dummy corporations, subvert employees of bonded carriers, etc. These requirements greatly increase the risk of detection.

34. While it would be feasible for the USSR to ship an atomic bomb as part of a shipment from a neutral country, the USSR would have to resort to one or more transshipment operations, thereby increasing the number of individuals involved and the risk of detection.

35. Because of the complexity of the smuggling operations, the risk of detection, and the availability of simpler and more secure methods, it is considered relatively improbable that the USSR would endeavor to smuggle an atomic weapon into the US under the guise of a commercial shipment.

Smuggling into Secluded Coastal and Border Areas

36. A more serious threat, well within Soviet capabilities, is the smuggling of an atomic bomb, especially if disassembled, from a Soviet port into an isolated section of the US. Complete security coverage of all coastal and border areas is practically impossible. Such a smuggling operation could involve the transfer of a bomb from a Soviet-controlled merchant vessel or submarine to a small boat which would bring it ashore. Here it could be loaded into a truck for assembly and subsequent delivery to the target area and possible detonation in the parked vehicle.

37. This would be the most difficult to detect of those methods which require the assistance of Soviet-controlled personnel within the US. The weapon would be in the hands of Soviet-controlled personnel at all times and would not come under the direct scrutiny of govern-

ment authorities. However, the requirement for several completely reliable individuals within the US, some of whom must possess special qualifications, might be a partial deterrent to the use of this method.

38. The capabilities of the Coast Guard, Navy and Air Force for air and sea patrols will remain limited until these services are operating on an expanded wartime basis. Coast Guard shore patrols are very limited in scope. However, the Coast Guard has:

a. Alerted all lifeboat stations and lighthouses to the threat of smuggling unconventional weapons across beaches and into isolated areas and inlets; and has solicited civilian intelligence in this regard.

b. Placed emphasis on active surveillance and boarding of small craft at inlet entrances.

39. No coordinated over-all plan has yet been completed for the detection and prevention of the smuggling of atomic weapons into the US at secluded points. Until such a plan is completed and put into effective operation, the US will remain vulnerable to this threat.

*Guided Missiles Launched from
Merchant Ships*

40. It is estimated that the USSR has V-1 type missiles with ranges of at least 100 miles which could be launched from merchant ships or submarines. Such missiles could operate at low altitudes and could have considerably better accuracy than the German operational missiles of World War II. While there is no conclusive evidence that the USSR has an atomic warhead suitable for use in a ship-launched guided missile, the construction of such a warhead is estimated to be within Soviet capabilities.

41. A Soviet merchant ship or submarine could reach its launching position with little chance of detection by maintaining radio silence and avoiding normal shipping lanes. Therefore, this method of clandestine attack appears well suited for employment of atomic weapons against critical near-coastal targets, including key harbors. Intense air and sea patrols would be required to minimize this danger.

Clandestine Attack With Chemical Warfare (CW) Agents

42. The term "CW agents" as used herein refers to those toxic chemical agents suitable for employment in mass quantities for chemical warfare. These agents are to be distinguished from the almost countless number of poisonous chemical compounds which are readily available to Soviet personnel from commercial sources and are suitable for contaminating food and water supplies and for poisoning key individuals. Employment of such commercial chemicals is considered to be conventional sabotage and is not included in this estimate.

43. Although the Soviets have large stockpiles of standard CW agents, these agents are not well suited for clandestine attack and their employment for that purpose is highly improbable. The CW agents most likely to be used for clandestine attack are the nerve gases, GA and GB, primarily because of their extreme high toxicity which is considerably greater than that of other known CW agents. The USSR probably has sufficient quantities of nerve gas for fairly extensive clandestine attacks. In common with atomic weapons, nerve gases are not suited for employment prior to D-Day inasmuch as their characteristic physiological effects would make their identification as enemy action relatively easy.

44. GA and GB are odorless, colorless liquids which become effective anti-personnel agents when dispersed as a fog or an invisible vapor. GB is approximately three times more toxic than GA. The initial characteristic physiological effects of GA and GB are contraction of the pupil of the eye, twitching eyelids, blurring of vision, tightness of the chest and difficulty in breathing. Exposure to a lethal concentration usually causes death within an hour. About one-fifth of a lethal concentration is sufficient to cause incapacitation for several days. In general, the persistence of nerve gases is a matter of hours rather than days.

45. In clandestine attack, it would not be feasible to build up the concentrations required for employment against population centers or

other targets of a sizable area. However, clandestine attack is well suited for employment against personnel in key installations when the objective is immediate incapacitation of a high percentage of the personnel, and physical destruction of the installation by an atomic weapon is not paramount.

46. Effective clandestine attack against personnel in key installations would require precise timing and positioning in disseminating relatively small quantities of nerve gas. Nerve gas may be disseminated effectively either in a building or in its immediate vicinity.

47. The most likely method of dissemination within a building would be by means of an aerosol bomb similar to those used for insecticides and equipped with a time mechanism. When disseminated throughout a confined space of 100,000 cubic feet, about 1/10 pound of GB would produce a concentration lethal to about 50 percent of the people exposed for 10 minutes.

48. If released in the vicinity, nerve gases will easily penetrate most buildings under proper weather conditions. A medium size building could be successfully attacked with one ton (250 gallons) of GB disseminated from a parked vehicle equipped with a compressed air source and adequate spray nozzles.

49. The only method of clandestine attack likely to be employed by the USSR would be the smuggling of nerve gas into the US for dissemination by saboteurs. While under present internal security measures the US is vulnerable to this method of attack, the necessity of relying upon Soviet-controlled personnel in the US might deter the USSR from smuggling nerve gas into the US.

50. The methods available to the USSR for smuggling nerve gas into the US correspond with those already discussed in connection with clandestine atomic attack, viz., diplomatic immunity, smuggling through Customs, or introduction at a point outside Customs surveillance. In all instances, the successful smuggling of nerve gas or the complete aerosol dispensers would be considerably easier. Nerve gas could be easily disguised as one of any number of commercial exports from the

Soviet orbit or transmitted in a diplomatic pouch.

51. Both the Coast Guard and the Bureau of Customs are well aware of this threat, but admit that it is practically impossible to insure detection of such a small-scale activity.

52. The most important phase of protection against clandestine attack with nerve gases is the local security of key governmental installations as provided by special guards, police, and military personnel. Except at a very few installations, present inspection of entering personnel and patrolling of adjacent areas is inadequate to prevent clandestine attack with nerve gas.

53. During the next year, at least, there will be no self-operating test to provide automatic warning of the presence of nerve gases. The standard military gas mask provides protection against GA or GB in vapor form except in concentrations higher than those likely to be encountered. Equipping key installations with specialized air filters offers little promise as a source of additional protection. These filters are prohibitive in size and cost and are not completely effective. The effects of nerve gas may be reduced by prompt recognition of the unique symptoms, injections of atropine sulphate within a few minutes of exposure, and artificial respiration combined with oxygen.

Clandestine Attack With Biological Warfare (BW) Agents

54. Biological warfare is the employment of living microorganisms, their toxic products, or chemical plant growth regulators to produce death or casualties among personnel, livestock, or crops.

55. On the basis of available information on Soviet interest and activities in BW, Soviet scientific and technical potential and US experience in the development of BW, it is estimated that:

a. The Soviets are capable of producing a variety of BW agents in sufficient quantities for extensive clandestine employment against man, animals, and plants.

5. The level of knowledge of the Soviets and their capabilities for disseminating BW agents are at least equal to those of the US.

56. BW agents are a new and untried weapon, and evidence of their effectiveness is based solely on limited experience and research. In general, biological warfare involves a larger degree of uncertainty than any other weapon of mass destruction. This might be a deterrent to Soviet employment of BW, particularly against personnel. On the other hand, the USSR might consider that this deterrent would be outweighed by our limited defensive experience and by the isolated geographic location of the US which would offer an excellent BW target.

57. Many types of BW agents are well-suited for clandestine attack, and could be employed by the USSR even well in advance of D-Day as part of an over-all plan to impair the military effectiveness of the US. In contrast to clandestine attack with atomic and chemical weapons, clandestine employment of certain BW agents would entail much less risk of identification as enemy action.

a. Very small amounts of these agents would be required initially. Such amounts would be almost impossible to detect when being brought into this country under the cover of diplomatic immunity or through smuggling operations. In addition, it would not be difficult to have some BW agents procured and cultured locally by a trained bacteriologist who was immunized against and simply equipped to handle dangerous pathogens.

b. BW agents do not produce immediate symptoms and their effects are not apparent until hours or days after dissemination.

c. The results of some BW agents resemble natural outbreaks of disease, and it would be difficult to connect clandestine employment of such agents with a hostile act.

Clandestine BW Attack against Personnel

58. It is likely that the only anti-personnel BW agents which the USSR would employ prior to D-Day would be those causing diseases common to the US since the outbreak of an unusual disease would probably arouse sus-

picion as to its source. The statistics of the Public Health Service on the incidence of various diseases in the US are made public and undoubtedly are known to the USSR.

59. In clandestine attack, it probably would not be feasible to build up sufficient concentrations of BW agents to produce large numbers of casualties in urban areas. However, BW agents might be employed clandestinely to incapacitate key individuals and personnel in vital installations.

60. Tests in the US with simulated airborne BW agents have demonstrated that a limited air space can be contaminated by dissemination of relatively small quantities of BW agents. Little is yet known regarding the likelihood of disease among personnel who are exposed to airborne BW agents, and scientific opinion in the US disagrees as to the incidence of disease likely to result from such contamination. However, dissemination of some airborne BW agents within a building probably would cause casualties among a large portion of the personnel. Similar results probably could be obtained from agents disseminated outside of a building and carried into the building by air currents soon after dissemination.

61. Detection and identification of a BW attack against the civilian population is dependent upon the alertness of health authorities having responsibilities for the control of epidemic diseases, assisted by practicing physicians and diagnostic laboratories. The Public Health Service is supporting these efforts by improving the reporting of unusual outbreaks of diseases, training medical officers to investigate epidemics, encouraging research on improved methods of diagnosis and immunization, and strengthening relationships between the medical and allied professions and official health agencies. In addition, the Federal Civil Defense Administration is conducting a program of public education in biological warfare.

62. Because of US medical and public health capabilities, it is believed that there is relatively little risk of a widespread self-perpetuating epidemic resulting from clandestine BW attack. However, under present internal se-

curity measures, personnel in most vital installations would be vulnerable to such attack.

Clandestine BW Attack against Livestock

63. The USSR could smuggle viruses of animal diseases into the US or might possibly obtain them in this country. In the former case, the virus could originate in the USSR or could be prepared by Soviet-controlled personnel from infected animals in South or Central America.

64. Diseases could be spread among livestock by contaminating their food, smearing their muzzles with the virus or spreading contagious material on the ground where it would be kicked up with dust. Individual herds could easily be attacked, but more widespread dissemination could be initiated by infecting animals in "feeder" stockyards, or at livestock auctions. The Department of Agriculture has indicated that widespread outbreaks of disease could also be brought about by contaminating the antitoxins, vaccines, and other biologicals manufactured in the US for the inoculation of animals. In the manufacture of these biologicals, production processes are continued over a long period of time and government supervision and physical security of production and processing operations are insufficient.

65. In a clandestine attack against animals, foot and mouth disease constitutes the most serious threat to this country. The disease is highly contagious. Furthermore, there is a relatively long period during which a diseased animal is capable of infecting other animals before the symptoms become apparent to anyone but an expert.

66. The occurrence of a BW attack against animals would be extremely difficult to prevent, or even identify as enemy action. The Department of Agriculture is aware of this threat and special instructions have been disseminated to its 3,000 county agents and other field representatives. The Department of Agriculture can be expected to isolate and eradicate resultant outbreaks of any known animal diseases, with the possible exception of foot and mouth disease.

67. It is estimated that the USSR might employ clandestine BW attack against US live-

stock, even well in advance of any planned D-Day. Although such attacks could be carried out with relative ease and could result in a sizable economic loss over a period of several years, they would not create a serious food shortage in the US.

Clandestine BW Attack against Crops

68. Certain fungi, known as "rusts," attack cereal plants and may reduce the yield in a given locality 40 percent or more. From time to time, a new variety of rust appears in the US, to which our cereals are not resistant. The principal remedy is to develop and plant varieties of cereals which will resist the new rust. This requires several years.

69. It would be feasible for the Soviets to smuggle into the US a small quantity of rust spores to which our cereals are not resistant and disseminate them over wheat fields under cover of darkness with a hand-operated blower. Depending on especially favorable weather conditions and other unpredictable factors, this rust might continue to spread and attack both winter and spring wheat over a large area.

70. Other possible BW agents which might be effective against US crops to a lesser degree include viruses causing tomato blight, potato blight, etc. However, it is considered that the results of an attack with these agents would not be serious. Blights of this kind are difficult to distribute widely, and can be successfully combatted by spraying the infected plants.

71. A variety of chemical growth regulators could be employed against crops as BW agents, e.g., weed killers, etc. These chemicals are disseminated by spraying them on the area under cultivation. While the results are disastrous to the area sprayed, the effect does not spread. It would be impractical to employ these agents in a clandestine attack against a large area since the amount of chemicals required averages 1/10 pound to 5 pounds per acre.

72. It would be possible to employ as BW agents insects which are in themselves harmful or which spread crop diseases. However,

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there is no indication that the use of insects as BW agents has been developed and such employment is considered unlikely.

73. It would be extremely difficult to prevent or identify a clandestine BW attack against crops. As in the case of BW attack against livestock, the Department of Agriculture is well aware of possible clandestine BW attack against crops, and can be expected to bring any plant disease under control or provide suitable replacement crops within a few years. The Department of Commerce has recommended a program which, if implemented,

would restrict the opportunities which exist for the use of small civilian planes by saboteurs for spray dissemination, etc.

74. It is estimated that the USSR might possibly employ some form of cereal rust in a clandestine BW attack against US crops. However, such attack is unlikely because of the uncertainty that this disease would spread over a wide area. In the event of an attack of this type, there would be no risk of starvation or a direct adverse effect upon the war effort, because of the abundance and diversification of domestic food production.

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