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THE PROBLEM

1. To determine: (a) the damage that would be inflicted on the US, the USSR and Communist China as a result of a nuclear exchange initiated by a Soviet surprise attack late in 1963, and (b) the status of the respective residual military forces and national resources.

SUMMARY AND CONCLUSIONS

A. GENERAL

2. In determining the answers to the problem it was necessary to program and analyze a nuclear exchange between the US and USSR. It must be noted, however, that the scope and intensity of destruction and the shattering of the established political, military, and economic structure resulting from such an exchange would be so vast as to practically defy accurate assessment. In addition, in any analysis which purports to evaluate events of the future it is necessary to make many assumptions. Our assumptions were based on the best available information, but in no individual case can they be defended as unimpeachable. Nevertheless, we believe that the results derived from the specific assumptions employed herein are within realistic limits.

B. NUCLEAR EXCHANGE

3. In accordance with the basic assumption approved by President Eisenhower, the nuclear exchange was initiated by a surprise ballistic missile attack launched by the USSR.

4. The first missiles to arrive on the continental United States (CONUS) \(^1\) targets were launched from five ballistic missile nuclear-powered submarines, four of which

\(^1\) The United States less Alaska and Hawaii.
were located in the contiguous waters of the US and one in Hudson Bay. All submarine-launched missiles were directed primarily against SAC bomber/tanker bases, and reached their targets undetected. Simultaneously, Soviet medium-range ballistic missiles and ballistic missiles from conventionally powered submarines struck SAC Reflex bases and Polaris submarine tenders overseas. The submarine missiles on the CONUS were followed immediately by Intercontinental Ballistic Missiles (ICBM's). Long-range bombers continued the Soviet attack.

The three levels of missile and bomber forces utilized in the Soviet attack were derived from the estimates given in the NIE. These forces successfully delivered the following weights of weapons against the CONUS:

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<th>No. of Weapons</th>
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<td>3.3(b)(5), 3.3(b)(8)</td>
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5. The Soviet attack occurred during the night of 31 October - 1 November 1963. Submarine-launched missiles and ICBM's were launched simultaneously at H - 10 minutes. This timing resulted in the ICBM's triggering the Ballistic Missile Early Warning System (BMESW). The Ballistic Missile Early Warning System consists of very high-powered radars located in Alaska, Greenland and England capable of detecting ICBM's launched from the USSR towards the US. Detection information is automatically transmitted to key command and control centers.

3/ H-hour, the time of first Soviet weapon detonation, was 2330 EST, 31 October 1963.
4/ The Ballistic Missile Early Warning System consists of very high-powered radars located in Alaska, Greenland and England capable of detecting ICBM's launched from the USSR towards the US. Detection information is automatically transmitted to key command and control centers.
The total Soviet missile and bomber attack was completed in about seven hours.

6. The BMEWS warning and subsequently the bomb alarm warning, were flashed to major US offensive and defensive headquarters. SAC airborne alert forces were directed to proceed toward assigned targets; missile forces initiated count-down; ground alert forces commenced their launch; and generation of follow-on aircraft was started. The Soviet attack did not prevent the launch of any US ICBM's or Fleet Ballistic Missiles (FBM's); had no effect on airborne alert aircraft; and permitted the launch of about of the ground alert aircraft. On the other hand, the attack destroyed large numbers of SAC follow-on aircraft, thus, very few of these aircraft participated in the US attack against the USSR. The US successfully against Soviet and Communist Chinese targets.

7. Only strategic forces of both sides were incorporated in this analysis. Other Soviet and US forces were assumed to have carried out operations in support of their war plans, but the results of these operations, except for attacks against SAC bases overseas and Polaris tenders, were not incorporated in the evaluation.

8. The results of this nuclear exchange and the conclusions derived therefrom are contained in the following sections.

The US Bomb Alarm System is a detection, transmission, and display system that will give positive indication of a nuclear event with a detection threshold through adverse weather of Detectors, which are sensitive only to the light from a nuclear explosion, will be located at military-industrial-population centers in the CONUS with display boards at the headquarters of NORAD, SAC, USAF, JCS, and at AJCC (Fort Ritchie, Maryland). In addition, a display may be installed at the National Resources Evaluation Center.

An Airborne Alert Force consists of combat-configured B-52's continuously airborne and capable of striking priority targets.
C. EFFECT OF THE US ATTACK

Effect on Sino-Soviet Military Forces

9. The US retaliatory attack created chaos and confusion. The Sino-Soviet populace in general, and also the vast system of political and economic controls of both countries were seriously affected. The command structures of the respective military establishments suffered severe destruction to facilities and personnel. Thus, surviving government and military leaders faced the tremendous task of re-establishing order, reorganizing forces, and revitalizing a devastated economy.

10. Strategic Forces. The intercontinental nuclear delivery capability of the USSR was severely degraded during the nuclear exchange. Only 44 out-of-commission ICBM weapons that required varying degrees of repair before becoming operational; 137 bombers of the Long Range Air Army with compatible tankers and weapons; and 5 nuclear-powered, as well as 19 conventional-powered, missile-launching submarines in varying degrees of readiness survived the attack. The effectiveness of this small but potentially usable force would be further degraded by the lack of command control and shattered communications.

11. Naval Forces. The Sino-Soviet navies suffered severe damage to their shore-based facilities and heavy personnel casualties, but the only significant effects on the fleets of combat surface ships and submarines—the bulk of which were at sea and not damaged in the initial exchange—resulted from the loss of most of their principal headquarters, bases and depots.
12. Air Defense Forces. Sino-Soviet air defense systems suffered heavy losses in aircraft and bases, but still retained a sizable numerical residual of both. However, surviving forces would be reduced to approximately 50 percent effectiveness due to heavy losses in long-range radar and in command control.

13. Support Facilities. Support installations, primarily air and navy, suffered drastic losses, and maintenance and repair facilities would be negligible immediately following the attack.

14. Summary. Following the nuclear exchange, the extent to which the Sino-Soviet military capability could be reconstituted would depend, to a very large extent, upon the ability of the surviving leadership to integrate and reactivate the residual economic resources, particularly in the war-supporting category.

Effect on Sino-Soviet National Resources

15. The physical damage to installations, industrial facilities, transportation systems, communication networks, and government control centers was severe, particularly in missile and "atomic energy production, aircraft construction and repair, submarine construction, and command control headquarters.

16. Effect on the Population. Population losses in the USSR and Communist China at the end of one month totaled 67 and 76 million people, respectively. Of particular import, in terms of post-attack activity were the 23 and 24 million casualties sustained by the respective urban labor forces. These losses occurred in spite of the assumption that seven percent of the trained industrial workers of the USSR had been evacuated to safety.
17. Effect on Survival Needs. In general, housing survived where people survived, but in many urban areas lack of available housing would create hardships. Food supplies were adequate, but the distribution of residual stores would pose a critical problem in damaged urban areas.

18. Effect on Government. Top leadership and key control personnel were assumed to survive. However, the severe destruction of government control centers, combined with heavy telecommunication losses, and the heavy casualties suffered by secondary government control forces, would greatly reduce the direction and control of the residual resources of the two countries.

19. Effect on Transportation. Losses in transport production capacities greatly limited the production of new equipment. Heavy destruction to repair plants and spare part shortages restricted the repair and routine maintenance of an already greatly degraded rolling-stock inventory. These material losses, in combination with heavy casualties in skilled and unskilled railroad labor forces, resulted in an over-all reduction of 50 percent in Sino-Soviet transport capability.

20. Effect on Industry. Sino-Soviet industrial production was severely degraded by the initial exchange; and even after a year, industrial output would approximate only 50 percent of pre-attack. Urban area losses greatly reduced physical capacities for the production of military, investment, and consumer goods. The physical destruction of plants and facilities when combined with the decimated and demoralized labor force would delay for an extended period the ability to produce significant quantities of war-supporting end items.
21. Effect on Petroleum. Petroleum refining and storage facilities suffered severe damage. Personnel losses associated with the industry were similarly severe, and continued production would suffer proportionately. Although adequate POL supplies survived distribution of these stocks in areas where needed would be most difficult.

22. Effect on War-Supporting Industries. Severe losses to physical resources and associated personnel of major war-supporting industries resulted in drastic reductions in Sino-Soviet pre-attack capacities. Destruction suffered by the industries associated with the production of missiles, aircraft, submarines, and atomic energy almost entirely eliminated any further production of these items for at least a year. In addition, destruction of repair facilities would greatly degrade the use of surviving stocks of weapons and missiles.

23. Summary. The Sino-Soviet military capabilities were greatly reduced as a result of the severe degradation to the nuclear delivery capabilities, the loss of approximately 50 percent of their air defense capability, drastic reductions to military support and maintenance installations, and the severe losses to command personnel and facilities. However, in spite of these degradations, residual forces, facilities, and supplies would permit the sustained support of some military operations during the first post-attack year.

D. EFFECT OF THE SOVIET ATTACK

24. The US suffered severe damage and destruction from the surprise Soviet attack under each of the three weights of the Soviet attack. Tens of millions of Americans were killed outright, millions more died in subsequent weeks. The framework of the federal and of many state governments was shattered. Military forces in CONUS were in large measure destroyed.
Effect on Military Forces

25. Virtually destroyed in all three levels of attack were the primary and alternate military headquarters, SAC bomber/tanker bases, NORAD fighter bases and SAGE control centers, major naval bases, naval vessels in port, and the principal army and marine troop concentrations.

26. Effect on Strategic Forces. Highest priority was given by the Soviets to destruction of US strategic forces. The cumulative effect of all Soviet weapons striking strategic forces resulted in the loss of 3.3(b)(5, 3.3(b)(8) tankers on the ground, world-wide bases, one Polaris submarine and one tender.

27. 3.3(b)(5, 3.3(b)(8) bombers successfully completed the retaliatory attack against Sino-Soviet targets and 3.3(b)(5, 3.3(b)(8) Of these, 3.3(b)(5, 3.3(b)(8)

3.3(b)(5, 3.3(b)(8) survived. In addition, Atlas, Titan and 3.3(b)(5, 3.3(b)(8) launch control centers and trained personnel remained. These elements of the strategic forces could in time be returned to operational status. Despite widespread damage 3.3(b)(5, 3.3(b)(8) adequate weapons of all types survived although their transportation to forces needing them would pose serious problems.

28. Effect on Other Air Force Elements. Other elements of the Air Force suffered widespread damage and heavy personnel losses. US Air Defense capability was severely degraded because of heavy losses to control centers, interceptors, surface-to-air missiles and associated facilities.
An average of 3.3(b)(5), 3.3(b)(8) of the tactical air force in the US survived and could be used after fallout had dissipated.

3.3(b)(5), 3.3(b)(8)

29. Effect on Army Forces. All major headquarters of the Army in CONUS were 3.3(b)(5), 3.3(b)(8). The combat and support units of the active Army were so 3.3(b)(5), 3.3(b)(8) that 3.3(b)(5), 3.3(b)(8).

3.3(b)(5), 3.3(b)(8)

30. Effect on Naval Forces. US naval facilities and ships in CONUS ports were 3.3(b)(5), 3.3(b)(8)

3.3(b)(5), 3.3(b)(8)

Approximately 3.3(b)(5), 3.3(b)(8) of the ships in port, 3.3(b)(5), 3.3(b)(8) of the personnel on shore, and 3.3(b)(5), 3.3(b)(8) of the shore installations were destroyed, damaged, or denied. On the other hand, 3.3(b)(5), 3.3(b)(8) of major fleet forces, were at sea at the time of attack and were presumed to have survived. The combat capacity of the Marine Corps in CONUS was essentially 3.3(b)(5), 3.3(b)(8)

3.3(b)(5), 3.3(b)(8)

31. Summary. As a consequence of the massive Soviet attack the military forces in the US were 3.3(b)(5), 3.3(b)(8) or rendered ineffective in the immediate post-attack period. However, in time, some elements of the residual strategic force could be reconstituted into effective combat units. These units would be made up from the surviving elements:

3.3(b)(5), 3.3(b)(8)

Effect on US National Resources

32. The three weights of Soviet attack on the CONUS resulted in the detonation of from 3.3(b)(5), 3.3(b)(8)

3.3(b)(5), 3.3(b)(8) The resultant damage and destruction was of such magnitude that the survival of the nation could be in jeopardy.
33. The direct effects of the attacks were:
   a. Blast overpressures sufficient to cause some structural damage over areas containing the residences of from 52 to 64 percent of the nation's population.
   b. Casualty-producing radioactive fallout, which at its maximum, blanketed from 45 to 71 percent of the nation's residences.

34. **Effect on the Population.** From 48 to 71 million people were killed outright, and casualties continued to increase for a year after the attacks. By this time, there were from 60 to 93 million dead and up to 3 million sick and injured out of a pre-attack population of 188.6 million.

35. **Effect on Survival Needs.** From a broad nationwide standpoint, the resources to meet austere needs for survival were potentially available after each attack except for 3.3(b)(5), 3.3(b)(6). However, the locations of residual resources were in many cases far from the survivors who needed them. With transportation disrupted, distribution of these supplies posed a most difficult problem. Non-processed foods were relatively plentiful and housing, by severe overcrowding, could meet minimum needs. The loss of from 57 to 73 percent of pre-attack capacity to process and deliver water would necessitate drastic conservation measures for an indefinite period.

36. **Effect on Communications.** From 30 to 50 percent of the nation's radio broadcasting stations were destroyed by the attacks. Generally, sufficient broadcasting facilities remained to reach people with operating radio sets except in the New England and the Middle Atlantic states. Landline communications were completely disrupted by the attacks.
There were, however, some telecommunications facilities throughout the country which could transmit high priority messages between many regions of the nation. But on the whole, for three months following the attacks, communications throughout the nation were almost entirely restricted to the output of local radio broadcasting stations. By the end of this period, reconstruction and rehabilitation of landlines permitted the resumption of two-way communications between major sections of the country after the light and medium attacks. Several more months would be required after the heavy attack.

37. Effect on Transportation. Severe damage to major railroad classification yards and repair shops combined with bottlenecks created by the destruction of cities and bridges and, above all, severely curtailed all rail movement after each attack. Highway movements, principally because of the limited to meeting only essential requirements. Sufficient shipping survived each attack to meet dry cargo movements for several months. However, destruction of

Following the heavy attack, loading and unloading of all cargo on both ocean coasts would require the use of small boats, lighters and over-the-beach operations. In short, transportation as a whole was drastically disrupted and would be put to severe test to meet austere requirements after each attack.

38. Effect on Industry. The effects of the attacks on industry were The following

for use following
the attacks. Certain critical categories suffered almost complete destruction. 3.3(b)(5), 3.3(b)(8)

3.3(b)(5), 3.3(b)(8) by the respective attacks and up to 3.3(b)(5), 3.3(b)(8)

On the average, 3.3(b)(5), 3.3(b)(8) industry was subjected to from 3.3(b)(5), 3.3(b)(8) This destruction, plus the disruption of the country's specialized economy involving widespread inter-dependency of all elements of production, would delay for well over a year the ability to produce significant numbers of any finished war products. The long-range prospect for all industry would be similar with significant production achievable perhaps in the third year following the attacks.

39. Effect on Labor. The immediate loss of from 39 to 59 percent of the labor force most seriously affected the nation's ability to produce goods and services. Although the surviving labor force could be augmented by people not previously part of the labor force, manpower productivity would reach only 50, 40 and 30 percent of pre-attack efficiency within a year after the light, medium and heavy attacks respectively.

40. Effects on Finance. As a result of the heavy losses of banking facilities and general disruption of the complex financial system, many localities were forced to resort to a system of barter. 3.3(b)(5), 3.3(b)(8)

3.3(b)(5), 3.3(b)(8) The effects of this 3.3(b)(5), 3.3(b)(8) upon the recovery of the nation after the light and medium attacks cannot be quantified, 3.3(b)(5), 3.3(b)(8)

3.3(b)(5), 3.3(b)(8) After the heavy attack, the nation would be faced with rebuilding 3.3(b)(5), 3.3(b)(8)

3.3(b)(5), 3.3(b)(8) in the sense of a unified nation.
41. Effects on Government. Essentially, the status of the Federal Government was the same following each weight of attack. The central government facilities in Washington were destroyed, and the nation's elected leaders and most agency officials became casualties. Enough members of Congress survived in their home districts to enable Congress to function, once convened. Surviving state and local governments, and the military in some areas, would be the principal sources of authority, until the Federal Government could be re-instituted, relocated and sufficiently organized to begin dealing with its overwhelming tasks.

National Appraisal

42. Summary. Looking ahead, it appears that at least a nucleus of essential elements of recovery emerged following the light and medium attacks to permit the nation to survive, but at drastically reduced economic standards and national strength.

43. The heavy attack was so utterly

3.3(b)(5), 3.3(b)(8)
E. CONCLUSIONS

44. The evaluation of a nuclear war and its effects three years in the future involves uncertainties in many areas. For example, there are problems in estimating performance of new US equipment. There are even greater uncertainties and difficulties in estimating the Soviet military posture of the future.

45. The data used in this analysis in regard to US forces and weapons systems was corrected and updated through 1 October 1960. Since that time, changes have occurred in approved service programs, but it was impracticable to incorporate such changes in the machine computations used in this evaluation after the October cut-off date. An example of such a change is the increased number of fixed Minuteman presently programmed to be operational by 1963.

45a. The assumptions as to Soviet forces were based on National Intelligence Estimates published during 1960. In the past few weeks new estimates of Soviet forces have been published. The most significant change is a downward revision in the number of missiles on launchers estimated for 31 October 1963. The reduction would amount to about 3.3(b)(5), 3.3(b)(8) of the missiles used in each of the three weights of attack analyzed in this study.

46. We have summarized the surprise Soviet attack, the United States reaction to this attack, and the casualties and destruction accruing to each side.

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<td>achieved</td>
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<td>3.3(b)(5), 3.3(b)(8)</td>
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With the large number of ICBM's credited to the Soviet Union in 1963 in the heaviest weight of attack the Soviets will have

Similarly, the United States, in the same period, has the capability of severely injuring the Soviet Union, although United States power will depend more on manned aircraft than upon missiles. The megatonnage delivered, and the destruction resulting therefrom is so vast in either case, that any assessment of the actual national capability existing after the nuclear exchange is indeed difficult. However, it is evident that the results of such an attack would be catastrophic. Furthermore, any conclusions as to the relative power positions of the United States and the Soviet Union must be tempered by considerations concerning morale and the "will to fight". We know of no way to assess or apply factors incorporating these considerations. Notwithstanding these uncertainties, it is believed that our evaluation of the results of the nuclear exchange occurring in late 1963 is within realistic limits and supports the following conclusions:

b. The people of the United States would be subjected to severe fallout and casualties would be high due to inadequate protection. There is an urgent requirement for protection of our people from fallout, including training in post-attack behavior.
Following a nuclear exchange in 1963, medical care would be hopelessly inadequate. It would be degraded to a level approximating family diagnosis, care, and treatment without any outside assistance.

d. Individuals of the Organized Reserves and the National Guard, because they generally live in densely populated areas, would suffer such heavy casualties from a nuclear exchange in 1963 that performance of disaster duty by units of these organizations would not be possible.

e. In 1963, the heavy casualties and loss of equipment suffered by units of all Reserve Forces in the continental United States would severely degrade their combat effectiveness and would also leave them little capability to perform even disaster duty.

Since manned bombers will constitute a major portion of the US strategic force in 1963, it is essential that the maximum number of these aircraft survive a surprise ballistic missile attack. Assurance of such survivability can best be achieved by airborne alert unless a massive program of dispersion and hardening is completed.

There are no warning systems programmed through 1963 capable of detecting Soviet ballistic missiles which do not penetrate the BMews radar arrays. There is an urgent requirement to expand US warning capability to detect such missiles.

There is an urgent need to counter the effectiveness of submarine-launched ballistic missiles against unprotected land-based retaliatory systems. As part of this effort, there is pressing need to improve US capabilities to destroy submarines before they launch their ballistic missiles.
j. In 1963 a Soviet ballistic missile attack would be unopposed and could inflict 30 to 50 percent of the total damage accruing to the United States. There is an urgent need for an operational anti-ballistic missile system.

k. The political and military decision-making mechanism and associated communication facilities are inadequate under conditions of surprise attack to insure the issuance and receipt of essential orders to US strategic forces surviving the Soviet attack.

l. A nuclear war initiated by a surprise Soviet attack in 1963 would result in devastation of large areas of both the United States and the USSR, leaving both countries greatly reduced in national strength. Their power positions with respect to one another following the Soviet light attack would be about equal. After the medium or heavy Soviet attacks, the balance of power would favor the USSR.

m. And finally, a general war initiated by a surprise Soviet attack on the United States in 1963 could kill from 39 to 49 percent of the population, destroy from 43 to 58 percent of all industry and virtually shatter the political, economic and military structure of the country.