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1959
REPORT
OF THE
NET EVALUATION SUBCOMMITTEE
NATIONAL SECURITY COUNCIL

NSS Declassification Review [EO 13526]
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By Mary Ronan

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II. SUMMARY AND CONCLUSIONS

A. GENERAL. The 1959 Net Evaluation is based on the analysis of a hypothetical war in May 1962, which was initiated by the USSR against the UNITED STATES and her ALLIES. Pursuant to the conditions specified for the analysis it was assumed that the U.S./ALLIED armed forces would have been alerted for a period of 48 hours prior to the initial attacks, such alert having been brought about by the detection of a heightened state of readiness for war on the part of the USSR. The heart of the analysis was a single war game which was triggered by a SOVIET surprise nuclear attack, and which immediately flared into world-wide nuclear war.

The summary which follows is an account of the interactions of opposing forces in the hypothetical war, and the more significant effects on the nations involved.

B. EFFECT OF SOVIET ATTACK

1. Concept. The deliberate preparations for nuclear war were made with the intention of preserving strategic surprise if possible, but not at the expense of restricting the immediate use of all nuclear capable forces which could be brought to bear against the UNITED STATES and her ALLIES. Consequently, air forces were allowed a five-day stand-down, submarines were deployed to target areas and other major units were generally alerted to permit a maximum effort in a coordinated surprise attack against the nuclear capable elements of the FREE WORLD. Whether or not strategic surprise could be preserved, the attack was to proceed with the belief that the initial paralyzing blow would result in an overwhelming position of advantage from which the USSR could successfully pursue her war objectives.

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2. The Initial Attack. The planned H-hour for the attack was 0400Z (midnight EST), 25 May 1962. At this moment, 15 megaton devices were detonated in the SOVIET Embassy in WASHINGTON and the offices of the SOVIET Delegation to the UNITED NATIONS in NEW YORK. At the same time, 23 long-range bombers, which had end run the distant early warning radar line and surreptitiously penetrated the U.S. defenses, neared their targets; the main body of the Long Range Air Force penetrated the DEW line; missiles launched from 38 deployed submarines approached their destination; and the first wave of long-range missiles penetrated the Ballistic Missile Early Warning System. Simultaneously, EUROPE and the FAR EAST were struck by intermediate-range missiles and elements of the Tactical Air Armies; and medium and light bombers of the Naval Air Force penetrated the defenses of the U.S. Sixth and Seventh Fleets. The detonation of nuclear weapons within the UNITED STATES reached a peak intensity within the first 30 minutes of the war. By this time, 132 ICBM's had struck on or near scheduled targets, and these were accompanied or immediately followed by some 50 submarine-launched missiles and 30 nuclear bombs from end-run bombers. By the end of the first hour the earliest delivery systems had been expended, and there occurred a lull in activity over the UNITED STATES, pending arrival of subsequent waves of missiles, and the first wave of manned aircraft. In other parts of the world where shorter ranges between targets and delivery bases prevailed the intensity continued to mount.

3. Damage in First Hour. The primary objective of the initial SOVIET strikes was the long-range nuclear capability of the UNITED STATES and her ALLIES. As a result of these earlier attacks the Strategic Air Command was severely

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degraded, losing 67 of 89 bases world-wide, and 60 per cent of ICBM launch sites. The air defense capability in NORTH AMERICA was degraded by roughly 50 per cent. Overseas, the theater ground forces and tactical air forces suffered heavy attrition, only ten per cent of ICBM sites survived and the UNITED KINGDOM "V" Force was completely destroyed on the ground. Other than the destruction of NEW YORK and WASHINGTON by clandestine weapons, damage to urban-industrial complexes was comparatively light.

4. Continued Attack to End of Nuclear Exchange. The second wave ICBM's arrived on target at about H + 0130 followed two hours later by the third and final wave. In all, these missiles detonated 62 nuclear weapons on or near their scheduled targets in CONUS. As the third wave missiles were detonating in the UNITED STATES the leading elements of the LRAF were penetrating the northern defenses and launching air-to-surface missiles. The ensuing air battle over the UNITED STATES and CANADA continued with varying intensity for the next five hours. Although severely punished by missile attack, and over-saturated by the numbers of penetrating aircraft, the U.S./ALLIED defensive elements were nevertheless able to inflict heavy losses on SOVIET invaders. Of some 790 aircraft of this force which penetrated U.S./ALLIED defenses world-wide, 360 survived to their assigned targets. As the air battle raged over the UNITED STATES the intensity of the SOVIET attacks in overseas areas began to subside. Intermediate range and tactical missile inventories were rapidly being expended; and Tactical Air and Naval Bombers had exhausted the better part of their nuclear stockpiles. Roughly 50 per cent of tactical aircraft were able to penetrate to their scheduled targets, and a slightly smaller percentage of naval aircraft

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arrived at their target areas. The last SOVIET nuclear weapon detonated at H + 0748. In this brief time the USSR had delivered 3,738 megatons on the UNITED STATES and her ALLIES. Thereafter, the heavy expenditure of SOVIET resources, plus the damage wrought by U.S. retaliation reduced the nuclear capability of the USSR to a level which was considered the termination of their nuclear offensive.

5. Damage by SOVIET Attacks

a. Military. In the brief nuclear phase of the war the military structure of the UNITED STATES underwent a dramatic change. Of the losses sustained the Air Force, and specifically the Strategic Air Command, was hardest hit. SAC lost 85 of 90 bomber/tanker bases; 1,200 of 1,700 bomber aircraft, essentially all missile-launching sites and over 85 per cent of its manpower. Although potentially capable of some continued action, no central control remained, and serious obstacles of a logistic nature would have to be overcome in order to mount an attack of any consequence. Tactical air lost two-thirds of its aircraft; 40 per cent of personnel, and was seriously wanting in control and communications facilities. Furthermore, the residual remaining was almost entirely located in CONUS, and would have to be deployed to active theaters under circumstances extremely unfavorable.

The Air Defense Command suffered the loss of roughly two-thirds of its physical resources and personnel. The residual would be plagued with inadequate control, but local decentralized elements could be effective against small raids of enemy aircraft.

Theater ground forces suffered extremely high casualties and the loss of essentially all higher headquarters. With only light nuclear support available, these

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forces would be incapable of organized delaying actions unless immediately re-enforced.

The Navy retained the ability to continue the war at sea in the immediate future. However, losses to shore activities would seriously degrade subsequent logistic support.

b. Damage to CONUS

(1) General. The SOVIET attack on the UNITED STATES resulted in the detonation of 561 nuclear weapons with a total yield of 2,118 megatons. The resulting damage was of such magnitude that the UNITED STATES would not fully return to pre-attack status for years. The direct effects of the attack were:

(a) Blast overpressure sufficient to cause some structural damage over areas containing the residences of 30 per cent of the nation's population;

(b) Widespread fires which ultimately ravaged 150,000 square miles of land area on which 28 per cent of the pre-attack population resided;

(c) A lethal blanket of radiation which, at its maximum affected over one-half the land area of the nation.

(2) Effect on the Population. Twelve and one-half million people were killed outright, and casualties continued to increase for a year after the attack. By this time there were 60.6 million dead and six million sick or injured, out of a pre-attack population of 185.5 million.

(3) Effect on Survival Needs. Except for medical needs, life-preserving requirements of the nation were for the most part available. Food and housing were generally more than adequate to meet minimum needs. In the NEW ENGLAND and SOUTHWESTERN states space requirements for the sick and injured were critical for

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months following the attack. The grave shortage of doctors, medical supplies and hospital facilities posed one of the most serious problems facing the nation.

(4) Effect on Communications and Transportation.

The nation-wide system of radio and telecommunications suffered some disruptions, but generally, remaining facilities were sufficient to meet attenuated needs. Transportation systems survived amazingly well. In time, inter-regional road, rail and air routes could be re-established with sufficient carriers available for each mode of transport to meet critical needs. CALIFORNIA and parts of the NORTHEAST faced the most serious restoration problems. Fuel shortages, organizational difficulties and lack of manpower rather than physical facilities would be the bottlenecks to full recovery of these services.

(5) Effect on Industry. Roughly 13 per cent of the nation's industrial resources were destroyed with an additional 22 per cent unavailable due to damage or radiation denial for periods varying from two weeks to one year. The remaining resources were able to meet the needs of the nation with careful distribution and rationing of some products. The glaring exception was that of medical supplies, in which case 50 per cent of the plants were destroyed. Only ten per cent of the war-producing capacity of the country was destroyed. However, the disruption of the country's specialized economy involving widespread interdependency of all elements of production delayed, for at least a year, the ability to produce most finished war products.

(6) Effect on Labor. The immediate loss of one-third 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 previously unemployed, the

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over-all effectiveness of labor would reach only 50 per cent of pre-attack efficiency within one year.

(7) Finance. The banking system, although damaged, was not rendered inoperable. The Federal Reserve System continued in operation with nominal losses which enabled all surviving banks to support the nation's rehabilitation and reconstruction efforts.

(8) Government. Having 48 hours' strategic warning, the Federal government, including the President, top agency officials, Congress and the Supreme Court, relocated safely to emergency sites prior to the attack. Almost all of the state governments escaped with little or no damage. The preservation of national and state governments provided the authority and discipline so necessary at this time to deal with the monumental tasks confronting the nation.

(9) Summary. Looking ahead, recovery tasks will be most formidable and time consuming, and adjustments to living and working under drastically changed conditions will be mandatory. However, under determined leadership, and by proper use of residual resources, the remaining population would be capable of eventually attaining pre-attack standards.

C. EFFECT OF U.S. ATTACK

1. Concept. It was assumed that the UNITED STATES would have detected the SOVIET preparations for war some 48 hours prior to the SOVIET planned time of attack. Consistent with the time available a maximum state of readiness was effected throughout the armed services of the UNITED STATES and her ALLIES. Thus the initial SOVIET attack found the UNITED STATES anticipating general war, and prepared to maximize retaliatory effort.

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2. Description of Attack

Nuclear detonations in NEW YORK and WASHINGTON, and the multiple penetration of BMEWS by SOVIET missiles provided the tactical warning which triggered U.S. retaliation. One-third of the SAC B-52 force was on airborne alert and immediately proceeded to assigned targets. Simultaneously, ICBM's from CONUS and IRBM's from overseas bases were counted down to launch; theater tactical air and naval units launched initial strikes; remaining SAC aircraft were launched as rapidly as possible; POLARIS submarines commenced firing from the NORTH SEA and the MEDITERRANEAN; and the ground forces in the EUROPEAN Theater began launching tactical missiles. By H + 0030 the U.S./ALLIED war machine was in full motion, and warheads of IRBM's were already detonating on target, followed closely by ICBM's and POLARIS missiles. From this time on, for the next ten hours, an almost continuous stream of missiles and aircraft penetrated the defenses of the SINO-SOVIET BLOC. The air battle over the USSR reached peak intensity during two periods, from H + 0200 to H + 0330, during which time the airborne alert force was over the target area; and again from H + 0700 to H + 1000 during the attack of the second wave of SAC aircraft. In spite of the strong defenses, which destroyed 646 of these 1142 penetrating aircraft, this force (SAC) placed [REDACTED] targets, the vast majority within the USSR.

Following the completion of the principal SAC attack at about H + 1000, the intensity of the U.S./ALLIED action gradually subsided until H + 1600, after which only sporadic strikes of naval, tactical air and ground units were in evidence until the nuclear exchange was terminated.

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(6.2)(a)

By the end of the nuclear exchange U.S./ALLIED forces had delivered [REDACTED] on the SINO-SOVIET BLOC.

3. Damage by U.S./ALLIED Attack

a. Military

The long-range nuclear capability of the USSR was severely degraded during the brief nuclear war. Although substantial physical resources remained (117 ICBM's, 483 long-range bombers and roughly 700 compatible nuclear weapons), the effective use of these resources would be exceedingly difficult with virtually no tanker support, and with an almost total lack of command control. It is estimated that within two weeks, barring further damage, the IRAF would be capable of mounting significant numbers of ICBM and long-range aircraft attacks. This could result in considerable additional megatonnage on the UNITED STATES.

The Tactical Air Armies possessed a residual of over 1200 aircraft, or 33 per cent, 100 nuclear weapons and 50 intermediate range missiles. Again, barring further attrition, these forces could effectively strike targets in EUROPE and ASIA if the remnants could be coordinated by the token control remaining. Physical losses to air defense forces were of similar magnitude, but all principal control centers were lost, and the residual capability was distributed in areas of lesser importance. By shifting and regrouping forces, the USSR would be capable of adequate defense against small raids.

Soviet ground forces were most seriously affected by the loss of higher headquarters, loss of transport within the USSR, and the heavy fallout over Western USSR. Actual casualties among combat troops were light, but nuclear stocks were essentially exhausted, and there was little capability for immediate re-enforcement or re-supply.

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The Navy suffered severe losses among its shore facilities, but the immediate effect on forces afloat was significant only in the loss of 75 per cent of principal headquarters and communication facilities.

b. Damage to USSR

(6.2)(a) The U.S. forces placed a total of [REDACTED] on the USSR, of which 95 per cent were ground burst. Almost all of these weapons were in the [REDACTED] or larger class.

The damage to physical installations, industrial facilities, transportation and communication networks, and controls was extensive, but the heaviest damage to SOVIET resources was sustained in population. Ninety-nine million fatalities resulted from the attack or about 47 per cent of the pre-attack population of 210.5 million people. Seventy-five per cent of the urban labor force became casualties with the key industrial cities of over 100,000 population averaging urban losses of 96.7 per cent.

In general food and housing would be above survival levels, but medical care would be in a state of chaos.

Government top leadership and key control personnel were assumed to survive at relocation sites. However 71 per cent of the total control personnel would be killed. All primary and secondary government control centers would be destroyed. All important civil telecommunication control centers would be inoperable. This loss of communications and control personnel would reduce drastically the over-all direction and control of the BLOC non-military war-supporting capability, and seriously impair government operation.

Residual war-supporting industrial capacity would approximate 45 per cent of the pre-attack level. Losses of labor force, transport, and power would degrade this capacity

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to a maximum production residual of 20 per cent during the first six months, and less than 5 per cent for several weeks after the attack.

Production for nuclear delivery would be insignificant. Submarine production would be reduced to zero. Petroleum refining would be nil for several months, though 32 per cent physical capacity remained. These degradations were due to the loss of the labor force.

All railroad system headquarters would receive severe blast damage. Half the yards and repair centers would be initially inoperable. Rail transportation would be negligible during the first month. To further hamper transportation and redistribution of residuals, half the maritime and inland ports would be destroyed and another quarter contaminated.

Assuming that the SOVIET government could maintain control and assuming that there were no restrikes, the USSR could survive as a nation though unable to provide integrated economic support for major land, sea, and air actions for several months.

D. CONCLUSIONS

Considerable speculation is inherent in any analysis which purports to evaluate events of the future. Throughout this evaluation it was necessary to make many assumptions based on staff estimates, and although these estimates were themselves based on the best available information, in no individual case can they be defended as unimpeachable. The more conjectural of these considerations which are integral to the evaluation are treated briefly in the following.

Intelligence estimates describing the forces and capabilities of the SINO-SOVIET BLOC in 1962 were especially prepared for us by the United States Intelligence Board, since their original preparation late in 1958, significant

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changes in these estimates have occurred, and it is reasonable to assume that many more will occur in the next three years. We note for instance that the USSR was given credit for a warhead of 1.5 megatons in the ICBM of 1962. The latest estimates available to us indicate that the yield of this warhead might be as high as eight megatons. A discrepancy of this nature seems alarming, but in fact, it is essentially nullified by the compensation of more current estimates of fewer missiles and aircraft. Intelligence estimates which bear on the composition of the SOVIET nuclear stockpile, on the organization, disposition, and capabilities of the SOVIET Long Range Air Force, and on the operational characteristics of SOVIET missiles and aircraft are most vital to an evaluation of this type, and in some cases these estimates are necessarily highly conjectural.

The problem of defining the strength, composition, equipment and capabilities of our own forces three years hence has proven most difficult in the face of scientific achievements, international developments and budgetary considerations. For example, there are many areas of doubt with respect to the anticipated performance of unproven equipment which do not permit us to be certain of our estimate in the case of these forces. A notable example concerns the Ballistic Missile Early Warning System. This system was to be operational in 1962, and the 1959 Evaluation assumes full operability. It now appears that the BMEWS will not in fact be fully operational in this time period, and considering the importance placed upon the necessity for 15 minutes' warning to alert our retaliatory forces, the outcome of a nuclear war could differ substantially from that portrayed herein.

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We are also uncertain of the effects of phenomena which could seriously degrade communications and electronic equipment. Studies of the effects of radiation clouds and the offensive electronic countermeasures on electronic systems are being actively pursued at this time. No estimate of their effect is included in this report other than a rather rough aggregation which considers the impact of electronic countermeasures.

Notwithstanding the many uncertainties involved, it is believed that the results of this hypothetical nuclear war are within realistic limits, and are sufficiently valid to support the following conclusions:

1. In 1962 a nuclear war initiated by the USSR, preceded by a period of strategic warning, would result in the devastation of large areas of both the UNITED STATES and the USSR. The USSR would receive the greater industrial damage and population casualties, but both sides would retain significant military forces capable of further limited operations. Thus, the result of the initial nuclear exchange in these circumstances would not necessarily determine the outcome of the war.

2. In 1962, in a general war initiated by the USSR, the SOVIET forces could deliver a nuclear attack on the UNITED STATES which would kill one-third the population, destroy one-sixth of the industrial resources, and disrupt the social and economic structure of the nation.

3. At least one-third - and conceivably a much higher proportion - of the damage accruing to the UNITED STATES in a nuclear war in 1962 would be the result of SOVIET missile attacks.

4. Without a warning of at least 15 minutes at the operational level of command, or a compensating plan of assuring the survival of a retaliatory force, the USSR could

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by missile attack alone in 1962 essentially destroy land-based unhardened elements of the U.S. retaliatory capability.

5. In 1962 a well-conceived and coordinated clandestine nuclear attack against air bases could result in serious degradation of the U.S. nuclear retaliatory forces.

6. Under the most likely conditions of a nuclear attack delivered by the USSR on the UNITED STATES in 1962, up to one-half the resultant casualties would be attributable to radioactive fallout. This includes a consideration that some adequate shelter would be available, but also that such shelter would not be properly used in all cases.

7. The U.S. Continental Air Defense capability programmed for 1962 is inadequate to defend against ballistic missiles, low-level aircraft and air-breathing missiles.

8. Following a nuclear war in 1962 medical care would be hopelessly inadequate and degraded to a level approximating family diagnosis, care and treatment without any outside assistance.

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