DRAFT
November 1, 1965

MEMORANDUM FOR THE PRESIDENT

SUBJECT: Recommended FY 1967-71 Strategic Offensive and Defensive Forces (U)

I have completed my review of our general nuclear war posture and our programs for the strategic offensive and defensive forces over the FY 1967-71 period. The estimated costs for the Previously Approved, the Service Proposed, and my Recommended Programs are presented below:

	FY 66	FY 67	FY 68	FY 69	FY 70	FY 71	Total FY 67-71
		(TOA in millions	of dollars)				
Previously Approved	6399	5796	5488	5348	5259		
Service Proposed	6552	7458	9459	10919	11393	11306	50535
SecDef Recommended	6392	6254	5995	5692	4888	4512	27341

This year we have given special attention to an analysis of threats over and above those projected in the latest National Intelligence Estimates of Soviet strategic offensive and defensive forces. We have done so because recent technological progress on our part, which if duplicated by the Soviets and incorporated in their strategic forces, could pose a new and much more severe threat to our Assured Destruction capability than postulated in the NIEs. This threat would arise, for example, if the Soviet Union were to deploy simultaneously a force of new ICBMs equipped with highly accurate, multiple, independently aimed re-entry vehicles (MIRVs) and a reasonably sophisticated anti-ballistic missile system. Although we do not now consider this to be a likely contingency, it does lie within their technical capabilities over the next ten years and could require some major changes in our strategic offensive forces in the future.

There are seven major issues involved in our FY 1967-71 programs for the general nuclear war forces. The first five are related primarily to the threat projected in the latest National Intelligence Estimates. The last two are associated with the possibility of a more severe threat. These issues are:

1. To what extent should qualitative improvements (in range, payload, etc.) be made in the MINUTEMAN force?

2. Should an effective manned bomber force be maintained in the 1970s; if so, what aircraft should be selected for the force?

#317

3. Should an anti-ballistic missile system be deployed; if so, when and of what type?

4. Should we produce and deploy a new manned interceptor?

5. What should be the future size and scope of the Civil Defense program?

6. Should development of new penetration aid packages for the POLARIS and MINUTEMAN missile forces be accelerated?

7. Should full-scale, accelerated development of the POSEIDON missile designed for use in POLARIS submarines be initiated?

After considering the alternatives open to us, I have concluded that we should:

a. Maintain the MINUTEMAN force at the previously approved level of 1,000 missiles, with the entire force to consist of the improved MINUTEMAN II and III a/ missiles by FY 1972. The FY 1967 cost of replacing MINUTEMAN I with MINUTEMAN II and III will amount to $1.0 billion, with a total cost of $2.9 billion for FY 1967-71.

b. Continue Engineering Development of the POSEIDON missile designed for use in POLARIS submarines. The FY 1967 cost will be $300.5 million and the total development cost will be about $1.3 billion, to achieve an Operational Availability Date (OAD) of August 1970.

d. Replace 345 B-52 C-F and 80 B-58 bombers by July 1971 (end FY 71) with 210 FB-111 dual purpose (i.e., tactical and strategic) aircraft incorporating the minimum modification to the F-111A necessary for strategic mission capability, including the Short Range Air-to-Surface Missile (SRAM). FB-111 IOC is estimated for the fourth quarter of FY 1969 and the build-up is to be completed by mid-1971. The FB-111/SRAM program will involve $72 million for R&D and $161 million for procurement in FY 1967. The FY 1967-71 costs of the recommended bomber program will be about $700 million more than the previously approved

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a/ MINUTEMAN III designated MINUTEMAN with multiple independently aimed re-entry vehicles (MIRVs).

program. However, retaining the B-52 C-F beyond 1972 would have required an additional $600-800 million of modification expenditures. Therefore, the FY 1967-71 costs of the recommended program are within $100 million of the cost of retaining the force of 600 B-52s.

e. Disapprove initiation of full-scale development in FY 1967 of the Advanced Manned Strategic Aircraft--development and deployment of 200 of these aircraft would cost about $8.9 billion, $11.5 billion in five year systems cost.

f. Disapprove an Army recommendation for pre-production funding of $188 million in FY 1967 to prepare for a limited deployment of NIKE-X. This would cost $6.0 billion from FY 1967-71 ($8.6 billion from FY 1967-75) and have an annual operating cost of about $284 million.

g. Continue the development of the NIKE-X system at an FY 1967 cost of about $417 million, including FY 1967 funds for development of a long range exo-atmospheric interceptor missile. This will give us an option to deploy a light anti-ballistic missile defense system designed against small or unsophisticated attacks such as the Chinese Communist will probably be capable of in the mid-late 1970's. Such a program would have an investment and five-year operating cost of between $5 and $6 billion. The production and deployment decision can be deferred for at least one more year.

i. Extend the approved Civil Defense Program, including the expanded program for shelter survey and the shelter prestocking program, at an FY 1967 cost of $184 million.

The recommendations form the basis for my FY 1967 budget for the strategic offensive and defensive forces. The remainder of this paper will discuss the rationale behind the recommendations:

A. The General Nuclear War Problem — Pg. 4

B. Capabilities of Our Against the Expected Threat — Pg. 5

C. Adequacy of Our tion Forces Against a Higher Soviet Threat in the 1970's. — Pg. 25

D. Specific Recommendations on Major Issues — Pg. 33

Revised: 11 Jan 1966

A. The General Nuclear War Problem

Last year in my memorandum to you on the same subject I pointed out that our general nuclear war forces should have two basic capabilities:

1. To deter deliberate nuclear attack upon the United States and its Allies by maintaining a clear and convincing capability to inflict unacceptable damage on an attacker, even if that attacker were to strike first;

2. In the event such a war nevertheless occurred, to limit damage to our population and industrial capacity.

Assured Destruction involves the maintenance on a continuous basis of a highly reliable ability to inflict an unacceptable degree of damage, even after absorbing a first strike, upon any single aggressor or combination of aggressors, independently of warning, and at any time during the course of a strategic nuclear exchange. This capability is the vital first objective which must be met in full by our strategic nuclear forces since it would ensure, with a high degree of confidence, that we could deter under all circumstances a calculated, deliberate nuclear attack upon the United States. Although we cannot and need not state with precision what kinds and amounts of destruction we would have to be able to inflict on an aggressor in order to provide this assurance, whatever that level may be, it must be provided regardless of the costs or the difficulties involved.

Once high confidence of an Assured Destruction capability has been provided, we should then consider additional forces and measures which would allow us to reduce the damage to our population and industry in the event deterrence fails. The level of the threat against which we might design Damage Limiting postures may range all the way from that posed by a minor nuclear power--for example, the Chinese Communists in the 1970s--to that posed by the Soviet Union in a carefully synchronized first strike against our urban areas.

With respect to the Damage Limiting problem posed by the Soviet nuclear threat, I believe it would be useful to restate briefly certain basic considerations which have guided our programs over the last several years:

First, against the forces we expect the Soviets to have during the next decade, it would be virtually impossible for us to be able to ensure anything approaching perfect protection for our population, no matter how large the general nuclear war forces we were to provide, even if we were to strike first. The Soviets clearly have the technical and economic capacity to prevent us from achieving a posture which could keep our fatalities below some tens of millions; in a Soviet first strike they could do this at an extra cost to them substantially less than the extra cost to us of any additional Damage Limiting measures we might take.

Second, since each of the three types of Soviet strategic offensive systems (land-based missiles, submarine-launched missiles and manned bombers) could, by itself, inflict severe damage on the United States, even a "very good" defense against only one type of system has only limited value.

Third, for any given level of Soviet offensive capability, successive additions to each of our various Damage Limiting systems have diminishing marginal value. The same principle holds for the Damage Limiting force as a whole; as additional forces are added, the incremental gain in effectiveness diminishes.

With respect to the Damage Limiting problem posed by an Nth country nuclear threat, e.g., Communist China in the 1970s, it now appears to be technically feasible to design a defense system which would have a reasonably high probability of avoiding any substantial damage. The deployment of such a system might also contribute to our objective of control of proliferation by strengthening the credibility of a possible U.S. commitment to come to the assistance of a friendly nation confronted by an Nth country nuclear threat. It might also deter the threatened or actual use of nuclear weapons by Nth countries acting independently of the Soviet Union.

It was with these considerations in mind that we have carefully evaluated the major alternatives available to us in meeting the two strategic objectives of our general nuclear war forces--Assured Destruction and Damage Limitation.

B. Capabilities of Our Forces Against the Expected Threat

In order to assess the capabilities of our general nuclear war forces over the next several years, we must take into account the size and character, of the forces the Soviets are likely to have during the same period.

1. The Soviet Strategic Offensive-Defense Forces

Summarized in the table below are the Soviet strategic offensive forces indicated in the latest, but still preliminary, National Intelligence Estimates for mid-1965-1967, and-1970. Shown for comparison are the U.S. forces in being or recommended for the same dates. A detailed tabulation of the U.S. forces can be found on Table I (page) of the Appendix.

U.S. VS SOVIET STRATEGIC NUCLEAR FORCES

ICBMs a/	
Soft Launchers	
Hard Launchers	
Mobile	
Total	
MR/IRBMs	
Soft Launchers	
Hard Launchers	
Mobile	
SLBMs	
Bombers and Tankers	
Heavy	
Medium	
Tankers	
Total	

While we have reasonably high confidence in our estimates of the size and composition of the Soviets' strategic offensive and defensive forces for the near future, many details concerning the technical and lethal characteristics of their weapon systems are less certain. Also, estimates for the latter part of this decade and the early part of the next decade are, of course, subject to great uncertainties.

a/ Excludes test range launchers having some operational capability of which the Soviets are estimated to have   in the mid-1965 to in the mid-1970 period.

b/ Soviet aircraft figures include tankers as well as bombers. U.S. medium bombers include FB-111s in 1970. The range of the FB-111 and the number of weapons it will carry, are markedly greater than those of the Soviet medium bombers.

a. Intercontinental Ballistic Missiles

At present the Soviet ICBM force is deployed on operational launchers, of which are soft and of which are hard and configured in a triple-silo pattern. As reported last year the ICBMs - all of which are liquid fueled - are designated the

The Soviets are constructing at least two types of single silo launch sites. We believe that the large payload ( ) liquid fueled

By mid-1967, the Soviet ICBM force is estimated to total between operational launchers. Compared with the Soviet missile force at mid-1965, this would be an increase of to ICBM launchers and to ICBM launchers.

In our estimates last year, we projected a Soviet ICBM force of some operational launchers for mid-1970. Because of the relatively early introduction of the single silo basing configuration our present estimate for mid-1970 is a minimum of and a maximum of perhaps to operational launchers, with the bulk of the force probably consisting of small payload missiles.

While it is possible that the Soviet ICBM force could expand in the later years of this decade at a higher rate than we now estimate, present deployment trends and economic, strategic and technical considerations would not appear to support a higher estimate.

b. MRBMs/IRBMs

Deployment of the MRBM (.) and IRBM ( ) forces appears to be completed with about operational launchers, of which are hard. We estimate that the size of this force will remain realtively constant through the mid-1967 period. Improvements through mid-1970 will probably include the deployment of solid fuel missiles (although no flight test program has been identified), some mobile units phasing out of the soft sites.

c. Submarine-Launched Ballistic Missiles

The trend in Soviet submarine construction is still not very clear. However, new programs under development or in production are not likely to affect Soviet missile submarine strength for the next few years. The Soviet Navy now has some [redacted] ballistic missile submarines with a total of [redacted] tubes. Only [redacted] of these submarines are nuclear powered and only [redacted] of these carry the [redacted] All of the other operational Soviet ballistic missile submarines contain the [redacted]

d. Manned Bombers

There is still no evidence that the Soviets intend to deploy a new heavy bomber in the late sixties. The force currently consists of some 200 heavy and 800 medium bombers, some of which are used as tankers. It is estimated that the Soviets will continue to maintain their heavy bomber force through mid-1967 although attrition would reduce this force to about 75 percent of the current level by the end of the decade. It is estimated that the medium bomber force will continue to decline gradually as older aircraft are phased out faster than the new BLINDERs are delivered.

As indicated last year, the Soviets' capability for intercontinental bomber attack remains limited. Considering the requirements for Artic staging, refueling and non-combat attrition, we estimate that the Soviets could currently place only slightly more than 100 heavy bombers over target areas in the U.S. on two-way missions. While we believe that medium bombers do not figure prominently in Soviet plans for an initial attack on the U.S., a limited force of BADGERs could attack targets in Greenland, Canada, Alaska and the extreme northwest U.S. on two-way missions.

e. Air Defense Fighters

The current operational strength of the Soviets' fighter-interceptor forces is estimated at [redacted] aircraft, of which more than 70 percent are older models. However, these aircraft are gradually being replaced by new generation fighters with both all-weather and air-to-air missile capabilities. There is also evidence that high-speed Mach 3 follow-on interceptors are in an early development stage.

f. Surface-to-Air Missile System

g. Anti-Ballistic Missile Defenses

We had at one time estimated that the Soviets were constructing an anti-missile defense system which

page 10 denied in total

SOVIET POPULATION AND INDUSTRY DESTROYED AS A FUNCTION OF THE NUMBER OF 1 MT WARHEADS DELIVERED (Assumed 1970 Total Population of 240 Million; Urban Population of 140 Million)

	Population Fatalities				Percent
	Urban		Total		Ind. Cap.
Delivered Warheads	(Millions)	(%)	(Millions)	(%)	Destroyed

The figures on population fatalities and industrial damage have been revised on the basis of recent data. At the lower levels of attack, population fatalities are somewhat higher and at all levels of attack, industrial damage is lower than the figures used last year. The major change is in industrial damage figures and results from a redefinition of Soviet industrial capacity. Last year these figures were based on a combined index of War Support Industries and Gross Industrial Product. Since Soviet War Support Industries are very concentrated geographically, small numbers of weapons showed large percentages of industrial damage; the new figures are based on Gross Industrial Product only, a more consistent measure of overall Soviet industrial capacity.

The delivery and detonation of warheads over Soviet cities would kill more than million people percent of the total population) and destroy half of the industrial capacity of the Soviet Union. By doubling the number of delivered warheads to Soviet fatalities and industrial capacity destroyed are increased by considerably Beyond this point, additional increments of warheads delivered do not appreciably change the results. In fact, when we go beyond about delivered warheads, we would be attacking

It is clear, therefore, that our strategic missile forces alone would be sufficient to inflict unacceptable damage on the Soviet Union, even after absorbing a well-coordinated Soviet first strike against our strategic offensive forces. Indeed, I believe that an ability to deliver and detonate warheads over Soviet cities would furnish us with a completely adequate deterrent to a deliberate Soviet nuclear attack on the United States or its Allies.

warheads detonated over Chinese urban centers would destroy of the urban population and destroy more than of their industry. Thus, the strategic missile forces recommended for the FY 1967-71 period would provide an Assured Destruction capability against both the Soviet Union and Communist China simultaneously.

4. The Role of the Manned Bomber Force

Given current expectations of cost, effectiveness, vulnerability to enemy attack before or after launch, and simplicity and controllability of operation, missiles are preferred as the primary weapon for the Assured Destruction mission. Their ability to ride out even a heavy surprise nuclear attack and still remain available for retaliation at times of our own choosing weighs heavily in this preference. On the basis of the latest intelligence, we are quite confident that the Soviets do not now have, and cannot have in the near future, the ability to inflict high levels of pre-launch attrition on our land-based missiles, or any attrition on our submarine-based missiles at sea.

However, for purposes of analysis we have estimated the additional forces which would be required if our missile forces turned out to be less reliable and suffered greater pre-launch attrition than presently estimated. To simplify the analysis we have taken a hypothetical case in which our missile forces would be barely adequate for the Assured Destruction task, given the expected missile effectiveness and allowing no missiles for other tasks. (In fact, as I have indicated, our approved missile forces are much more than barely adequate for this task and therefore already have built into them a good measure of insurance.) The table below shows the cost of insuring against various levels of unexpected missile degradation by buying either additional missiles or bombers to attack the targets left uncovered as a result of the assumed lowered missile effectiveness. Against the current Soviet anti-bomber defenses we have measured the cost to hedge with B-52s armed with gravity bombs since the FB-111/SRAM would be a more expensive alternative. Conversely, against an improved Soviet anti-bomber defense, the FB-111/SRAM was used as providing a cheaper hedge than the B-52 armed with either gravity bombs or SRAM.

COSTS TO HEDGE AGAINST LOWER THAN EXPECTED MISSILE EFFECTIVENESS
(Ten Year Systems Costs in Billions of Dollars)

	Cost to Hedge With:		
Assumed Degradation to Missile Effectiveness (Realized/Planned)	Additional Missiles	B-52/Gravity Bombs (Against Current Soviet Anti-Bomber Defenses)	FB-111/SRAM (Against Improved Soviet Anti-Bomber Defenses a/)

Only when missile effectiveness falls to less than about 50 percent of the expected value are bombers more efficient than additional missiles for insurance purposes. Against current Soviet defenses, the B-52 G and H force is adequate to hedge against complete failure of the missile force for Assured Destruction. Against possible future Soviet defenses, we must be willing to believe that our missile effectiveness could turn out to be as low as about 30 percent of our planning value before we would wish to insure by bombers rather than by additional missiles.

Similar arguments could be developed with respect to greater than expected Soviet ballistic missile defense effectiveness. There, too, it would be necessary to assume very large and expensive Soviet ballistic missile defense programs before bombers became a preferred form of insurance.

Accordingly, for the Assured Destruction mission, manned bombers must be considered in a supplementary role. In that role they can force the enemy to provide defenses against aircraft in addition to defense against missiles. This is particularly costly in the case of terminal defenses. The defender must make his allocation of forces in ignorance of the attacker's strategy, and must provide in advance for defenses against both types of attack at each of the targets. The attacker, however, can postpone his decision until the time of the attack, then strike some targets with missiles alone and others with bombers alone, thereby forcing the defender, in effect, to "waste" a large part of his resources. In this role, however, large bomber forces are not needed. A few hundred aircraft can fulfill this function.

The present strategic bomber force consists of some 600 operational B-52s and 80 B-58s. Some 345 of the operational B-52s are the older C through F models. Last year we had planned to keep these aircraft operational through 1972 by a program of life extension modifications and capability improvements, at a cost of about $1.3 billion. To keep them operational through FY 1975 would cost another $600 million for modifications, and even then we could not be certain about their life expectancy. Thus, these older B-52s will eventually have to be phased out of the force, leaving a total of 255 operational B-52Gs and Hs. These later models of the B-52 can be maintained in a satisfactory operational status at least through FY 1975 and the modifications necessary to ensure this have already been included in the previously approved program.

Shown in the following table are the characteristics of three aircraft which might serve as replacements for the B-52s, compared with the B-52C, the B-52H and the B-58.

	B-52C	B-52H	B-58	FB-111A+	FB-111M-3	AMSA
Maximum Speed (knots)						
at high altitude						
sea level						
Ferry Range (unrefueled)N.M.						
Combat Range (1 refuel)N.M.						
All subsonic b/						
Full Tanker						
Down Loaded Tanker						
Part supersonic c/						
Full Tanker						
No. of SRAMs						

The FB-111A is a bomber version of the F-111 with the minimum changes required to make it suitable for the strategic bombing role. The FB-111M-3 is a larger version of the F-111. It would have a longer fuselage, a maximum takeoff gross weight of 130,000 lbs compared with 111,000 lbs for the FB-111A and would carry a crew of 3 instead of 2. It would also have about a 10 percent greater combat range. The AMSA is an entirely new and larger aircraft which has yet to be developed. The characteristics and cost of the AMSA were discussed in considerable detail in my memorandum on this subject last year.

The first operational FB-111s could be available in FY 1969 and the first FB-111M-3s about a year later. For a force of 210 U.E. aircraft, the FB-111M-3 would cost about $800 million more than the FB-111As, including development and production. The most significant operational factor in favor of the FB-111M-3 over the FB-111A is the availability of space for a crew of 3 instead of 2. The larger crew could spread the heavy workload and reduce the strain involved in strategic missions. The FB-111, however, would have essentially the same performance as the fighter version and could be easily used in that role. The FB-111M-3 would have less range with the same payload in that role because of its greater weight, and could not operate as efficiently from the shorter runways for which the F-111A was designed.

The Air Force proposes:

a. The production and deployment of a force of 210 (U.E.) FB-111As and the phase out of the 345 B-52 C-Fs.

b. The initiation of a contract definition phase for an AMSA in FY 1967 at an expenditure of $11.8M looking towards an Initial Operational Capability in FY 1974 at a total development cost of about $1.6 billion.

c. The procurement of short range attack missiles (SRAM) for the B-52 Gs and Hs as well as the FB-111A at an addition cost of about $400 million.

I fully support the first of these Air Force proposals. I believe, however, that we can safely phase out the B-52 Cs-Fs on a somewhat faster schedule than that proposed by the Air Force. I also propose to hold the FB-111A configuration as close as possible to the fighter version so that it would, indeed, be a dual purpose aircraft -- strategic and tactical. The role of the manned bomber in the strategic offensive mission, as we see the threat today and over the next five years, simply does not warrant any large expenditure on new manned bombers at this time.

To hedge against currently unforeseen requirements to replace the B-52 G and H series with a manned aircraft capable of effective penetration against possible advanced Soviet bomber defenses, system studies and advanced development of subsystems suitable for an Advanced Manned Strategic Aircraft (AMSA) should continue. There does not appear to be sufficient reason to start an engineering development program for AMSA now because of the high cost of the system, and because the recommended bomber force offers adequate insurance against the range of threats for which we have any current evidence.

With regard to the Air Force's third proposal, no immediate decision to equip the B-52s with SRAM is needed until we have a more substantial indication of an improvement in Soviet low altitude terminal defenses. However, the capability to install SRAMs on B-52s should be developed.

Although not proposed by the Air Force, I also believe we should plan to phase out the remaining B-58 medium bombers in FY 1971 when the build-up of the new FB-111 force is completed. We now have 80 operational B-58s and this number would decline through attrition to about 70 by FY 1971. Their primary advantage resides in a supersonic dash capability. Once the FB-111 enters the force the uniqueness of this feature of the B-58s will be lost, and their contribution to the strategic offensive forces will become marginal.

In summary, the objective of forcing the enemy to split his defense resources between two types of threats could be performed adequately by B-52 bomber forces considerably smaller than those now programmed. However, introduction of a dual-purpose FB-111 would provide added insurance at a relatively small cost. A mixed force of B-52G-Hs together with some FB-111/SRAM now appears to be a reasonable choice since the SRAM with its low level standoff capability and range of about miles can force the enemy to build expensive terminal bomber defenses or be fulnerable to low altitude attack. Even against very advanced terminal defenses the small size and low weight of SRAM would allow the U.S. to saturate or exhaust the defenses with large numbers.

The cost of the manned bomber force I recommend compared to the cost of continuing the current forces is shown in the table below:

	FY 1967	FY 1971	FY 1975
	(Costs in Billions of Dollars)		
Current Force Extended			
Forces			
B-52	600	600	600
B-58	80	70	64
Cost (Cumulative '67-)		$8.6	$17
Recommended Bomber Force			
Forces			
B-52	600	255	255
B-58	80	0	0
FB-111	0	210	210
Costs (Cumulative '67-)		$8.4	$14

5. Adequacy of the Strategic Offensive-Defense Forces for Damage Limitation

The ultimate deterrent to a deliberate nuclear attack on the United States or its Allies is our clear and mistakable ability to destroy the attacker as a viable society. But if deterrence fails, either by accident or miscalculation, it is essential that forces be available to limit the damage of such an attack to ourselves or our Allies. Such forces include not only anti-aircraft defenses, anti-ballistic missile defenses, anti-submarine defenses, and civil defense, but also offensive forces, i.e., strategic missiles and manned-bombers, used in a Damage Limiting role.

a. Damage Limitation Against the Soviet Nuclear Threat

With regard to the Soviet Union, the potential utility of all Damage Limiting efforts, including the use of our strategic offensive forces in that role, is critically dependent on a number of uncertainties:

1. Future developments in their general nuclear war posture;
2. Their response to our efforts at Damage Limiting; and,
3. If deterrence fails, the precise timing of a nuclear exchange as well as their objective in such an exchange.

In order to illustrate some of the major issues involved in this problem, we have tested a range of possible Damage Limiting programs against different possible future Soviet threats. In practice, of course, uncertainty about the direction in which the Soviet posture was developing would lead us to maintain a flexible approach, matching the scope of our deployment of forces to our evolving knowledge of the Soviet threat. Nevertheless, these cases help to develop an appreciation of the possible future costs and benefits of such programs.

For the purpose of this analysis we have used two hypothetical Soviet threats, the strategic offensive portions of which are shown below:

	1967	1970	1975
Soviet Threat Ia			
ICBMs			
Bombers/Tankers			
SLBMs			
Soviet Threat III			
ICBMs			
Bombers/Tankers			
SLBMs			

Threat Ia is basically an extrapolation of the latest intelligence estimates, reflecting some future growth in both offensive and defensive forces. Threat III is a large Soviet response to our deployment of a ballistic missile defense with much greater than expected growth in both offensive and defensive forces. It includes a large number of big, land-based missiles equipped with penetration aids designed to overwhelm our defenses. Threat III also assumes that the Soviets respond defensively to our Damage Limiting efforts with an extensive deployment of a reasonably sophisticated ABM system around 25 of their major urban areas.

The major defensive components of the four U.S. Damage Limiting postures considered in this analysis are shown below:

U.S. Posture Components	Alternative U.S. Damage Limiting Posture Against:			
	Soviet Threat Ia		Soviet Threat III	
	Posture A	Posture B	Posture C	Posture D
NIKE-X				
SPRINT msls				
ZEUS msls				
Terminal Bomber Defenses				
SAM-D Btrys				
Air Defense				
F-12 Interceptors				
Cities w/Terminal Defenses				

Postures A and B are tailored against Soviet Threat Ia; Postures C and D against Threat III. In addition, all Postures contain additional offensive missiles for Damage Limitation. However, because Threat III is stronger than Ia, Postures C and D would require more of these missiles than Postures A and B.

The interaction of the various Soviet threats and the four alternative Damage Limiting programs is shown on the table on page   The program costs shown on that table represent the value of the resources required for each of the alternative postures. The costs for Assured Destruction represent the resources required to ensure that we can, in each case, deliver and detonate the equivalent of 400 one megaton warheads over Soviet cities. The costs for Damage Limiting represent the value of the additional resources required to achieve the various postures shown on the table. The last two columns of the table show the U.S. fatalities which would result under two alternative forms of nuclear war outbreak.

COSTS OF U.S. DAMAGE LIMITING POSTURES AND SOVIET DAMAGE POTENTIAL

	Program Costs FY 66-75 (Billions of Dollars)		Soviet Damage Potential in Terms of Millions of U.S. Fatalities c/ d/	
	Assured Destruction	Damage Limiting Increment	Soviet First Strike	U.S. First Strike e/
1970				
S.U. Expected Threat U.S. Approved Program			130-135	90-95
1975				
S.U. Threat Ia				
U.S. AD a/ Posture plus App'd Civil Defense Prog.	$16.8	$1.4	130-135	95-105
U.S. AD a/ Posture plus Full Fallout Shelter Prog.	16.8	3.6	110-115	80-85
U.S. DL b/ Posture A	16.8	28.1	80-95	25-40
U.S. DL b/ Posutre B	16.8	35.7	50-80	20-30
S.U. Threat III				
U.S. DL b/ Posture C	28.5	24.8	105-110	35-55
U.S. DL b/ Posture D	28.5	32.3	75-100	25-40

In the first case, we assumed that the Soviets initiate nuclear war with a simultaneous attack against our cities and military targets. In the second case, we assume that the events leading up to the nuclear exchange develop in such a way that the United States has no better alternative than to strike first.

The ranges of fatalities estimated in the table reflect some of the possible variations in Soviet targeting doctrine, technological sophistication, possible errors in attack planning and in the degree of the disruption to Soviet attack coordination. The higher end of the ranges of fatalities shown for each case represents the full damage potential (a well-planned, well-coordinated attack to maximize fatalities) under the given scenario. The lower end of the ranges of estimates represents likely degradations in execution and targeting, rather than lower bounds on the possible effectiveness of Soviet weapon systems. All estimates assume that the Soviets have missile penetration aids which are as sophisticated as our own are expected to be in the same time period.

The first line on the table shows the Soviet damage potential against the currently approved U.S. program in 1970. It illustrates the projected performance of the currently approved bomber defenses, the Civil Defense program and the strategic offensive forces. Without these programs, the damage potential could be 160 million or more U.S. fatalities in a mixed Soviet attack on military and civilian targets. A full Soviet attack directed against our urban areas only would not increase this total by very much.

As shown on the second line of the table, the situation is not substantially changed by the assumed Soviet buildup (Threat Ia) between 1970 and 1975. A Full Fallout Shelter Program, at a cost of about $3.6 billion would reduce fatalities by about 15-20 million in all three cases. Damage Limiting posture (cost -- $28.1 billion) might reduce fatalities to somewhere between 80 and 90 million and Posture B (cost -- $35.7 billion) to between 50 and 80 million in an early urban attack. But the benefits of these Damage Limiting programs could be substantially offset, especially in the case of a Soviet first strike, if the Soviets were to increase their offensive forces to the levels assumed in Threat III.

Even larger Soviet responses than that of Threat III cannot be ruled out by what we know of Soviet technology and resource constraints. Whether or how the Soviets actually will respond depends on how strongly they desire a reliable threat against the United States and on the alternative military and non-military uses for the resources involved.

Our own uncertainty about how well our Damage Limiting forces would work is likely to remain large. Some, but by no means all of the uncertainties are reflected in the table of page . It is difficult to quantify the operational conditions of nuclear war. Degradations in our missile defense reliability or in our offensive missile accuracy might have substantial effects. For example, if our operational missile aiming error were 50 percent higher than we assumed against Soviet hard missiles, the expected Soviet damage potential after a U.S. first strike (even with Posture B) would be 30 to 45 million U.S. fatalities instead of the 20 to 30 million shown on the table. Even more important to the outcome of a U.S. first strike is the question of the speed and nature of Soviet response. We estimate that the Soviets have the ability to place their missiles on alert during a crisis, and, in the case of their hard missiles, to keep them at 5 to 15 minute readiness for extended periods. Accordingly, there is always the possibility that they might get warning of our attack and launch at least their ready missiles at our cities before the impact of our missile attack. In that case, U.S. fatalities, even if we struck first and provided for Damage Limiting Posture B, would be 45 to 65 million.

The costs of the various Damage Limiting programs would, of course, be spread over a period of years. Even so, they would reach $5 to $6 billion per year in the early 1970s. To maintain or improve the postures shown (against an evolving Soviet threat) might involve continuing an annual expenditure of $3 to $5 billion.

On the basis of our analysis of the major Damage Limiting program alternatives in relation to the Soviet nuclear threat, I have reached the following conclusions:

1. Against likely Soviet postures for the 1970s, appropriate mixes of Damage Limiting measures can effect substantial reductions in the maximum damage the Soviets can inflict, but only at substantial additional cost to the U.S. above the requirements for Assured Destruction. Even so, against a massive and sophisticated Soviet attack on civil targets, we cannot have high confidence of reducing fatalities below 40 or more millions.

2. Efficient Damage Limiting against the kinds of postures available to the Soviets, considering their technology and resources, requires a mix including a full civil defense Fallout Shelter Program, ballistic missile defenses, and improved bomber defenses. Against a very rapid buildup of the Soviet missile forces based in hard silos, additional U.S. missile payload may have to be added.

3. Feasible improvements in missile accuracy, and the use of MIRVs where applicable, can greatly increase the efficiency of our offensive forces against hard Soviet targets. However, the effectiveness of offensive forces in Damage Limiting is sensitive to the timing of a nuclear exchange.

page 21 denied in total

highly visible threat to the U.S., designed to undermine our military prestige and the credibility of any guarantee which we might offer to friendly countries. An effective defense against such a force might not only be able to negate that threat but might also prevent their use of nuclear weapons for aggressive purposes and possibly discourage their production and deployment of such weapons altogether.

Recent studies have convinced us that the development of an area ABM defense weapon is feasible and, indeed, we have reprogrammed some $22 million of FY 1965 funds to initiate this development. The area defense weapon, a long range missile interceptor designated DM15X2, would, of course, be used in combination with other components of the NIKE X system. Furthermore, other elements of a Damage Limiting posture might also be required -- anti-bomber defense, , civil defense.

In order to illustrate the problem of defense against an Nth country nuclear threat, we have analyzed three Damage Limiting postures in relation to two levels of threat in the mid-1970s. The major ABM components of these postures are shown below:

MAJOR COMPONENTS OF ILLUSTRATIVE MISSILE DEFENSES
AGAINST LIGHT ATTACK

	Posture A	Posture B	Posture C
Cities With Local Defense			
Major Components			
TACMAR Radars a/			
VHF Radars b/			
Missile Site Radars (MSR II) c/			
Area Interceptors			
SPRINT Interceptors			

Posture A provides terminal ABM defense for cities using MSRs and SPRINT interceptors, but no area defense. Postures B and C both include an area defense of the entire country, based primarily on TACMAR radars for long range acquisition of targets, and area interceptors

Posture B also includes terminal defense for cities. Posture C provides terminal defense for cities and a heavier area defense.

The effectiveness (and cost) of the defenses could be increased further by strengthening them in any of a number of ways. Against attacks employing no penetration aids, increasing the number of long range interceptor missiles might be preferred. Against more sophisticated or larger attacks, the number of Missile Site Radars might be increased from one to two at each point defended with SPRINT, the capabilities of the TACMAR radars might be increased, or the number of cities with terminal defenses might be increased.

Defense against Nth country aircraft involves area protection--insuring that no enemy aircraft regardless of its target or direction of attack can be sure of success. A minimum defense could be provided by situating our current interceptor aircraft around the periphery of the country. The force required for the peacetime air surveillance mission would provide a relatively effective defense against small attacking bomber forces in the northeast and north central sections. For other sections of the country appropriate deployments of Airborne Early Warning and Control (AEW&C) aircraft could reduce significantly the probability of penetration. To achieve higher effectiveness, this minimum area air defense could be supplemented, first by improved surveillance capability--to insure against enemy aircraft approaching U.S. airspace undetected, and secondly, by the introduction of more advanced interceptors capable of intercepting attacking aircraft with higher probability, and further from our borders.

Fallout shelters are designed primarily to protect against collateral fallout from counter-military attacks, weapons aimed at other urban-industrial areas or weapons deliberately exploded upwind of population targets in order to avoid terminal defenses. The "area" defense described above might be very effective in denying the last of these tactics, especially against small attacks. The other two sources of fallout are also relatively much less important in light attacks. This suggests that, against small unsophisticated attacks, something less than a Full Fallout Shelter Program may be appropriate in a light Damage Limiting posture.

Much more analysis of light defense postures is required before we are in a position to choose appropriate combinations of the various components.

To illustrate the potentials of a "light" defense, we have examined the cost and performance of Postures A and C against small ICBM attacks of the sort that the Chinese Communists might be able to mount in the latter part of the 1970s (approximately warheads over the U.S.) (Posture B has been omitted since it is simply a scaled-down version of Posture C.) The results of this analysis are summarized below.

U.S. Posture	Five Year Systems Costs ($ Billions)	Millions of U.S. Fatalities	
		Attacking Missiles	Attacking Missiles
Approved Program (Extended)		6	12
Posture A	8.7	3	6
Posture C	8.2	0-1	0-2

The costs shown are for the ABM components of the program only; they include investment, operating and future R&D. The fatalities shown represent expected fatalities assuming missiles carrying the equivalent of 1 MT warheads. The lower bound of zero for Posture C represents the defense effectiveness against a very unsophisticated attacker or even an attack on major U.S. cities with a somewhat more sophisticated payload. The upper bound represents an attack (with the more sophisticated payload) designed to maximize the number of fatalities even if it means avoiding major U.S. cities. The table above does not deal explicity with contribution of our offensive forces to Damage Limiting against Nth countries. Their contribution, however, would be substantial both in terms of the retaliatory threat they would pose and in terms of their effectiveness in pre-emptive counter-military strikes.

This table brings out two important points: (1) Posture C, which includes an is far superior on a cost-effectiveness basis than Posture A which does not; and (2) the successful development of the would, for the first time, give hope of achieving a high confidence defense against a light ICBM attack, not just for a few selected cities, but for the entire nation.

The effectiveness of light Damage Limiting postures against future Soviet threats has not yet been analyzed. It appears clear, however, that the larget Soviet threats examined earlier in this memorandum could simply exhaust the defense in a Soviet counter-urban first strike. Against smaller Soviet postures, or Soviet attacks degraded in numbers or coordination by prior U.S. counter-military attacks, offense penetration aids and tactics might produce singificant variations in outcome. Penetration aids such as re-entry vehicles hardening and exo-atmospheric chaff would have important effects for attack levels of about Soviet missiles.

The problem of designing light Damage Limiting postures is not yet well understood. On the basis of information and analysis available at present I have reached the following tentative conclusions:

1. A light anti-ballistic missile system using

defense at a small number of cities, offers promise of a highly effective defense against small ballistic missile attacks of the sort the Chinese Communists might be capable of launching within the next decade. Such a defense would have initial investment and five year operating costs (including R&D) of about $5 to $8 billion, depending on the number of cities defended by SPRINT and the density of the area coverage.

2. With such a defense the presently Approved Civil Defense program may be appropriate. Analysis is needed of the interaction of light active defense programs with Civil Defense.

3. It appears likely that such a defense would remain highly effective against Chinese capabilities at least until 1980, even if the presence of this defense did not, in the first place, deter them from developing a strong ICBM capability.

4. Once fully deployed, this defense system could be strengthened to increase its effectiveness against larger or more sophisticated threats--by adding more long range interceptors, by improving the or by increasing the number of cities with terminal defenses.

5. On the basis of our present knowledge of Chinese Communist nuclear progress, no deployment decision need be made now. But the development of the essential components should be pressed forward vigorously.

C. Adequacy of Our Assured Destruction Forces Against a Higher Than Expected Soviet Threat in the 1970s.

At the beginning of this memorandum I noted that we had given special attention this year to an analysis of Soviet threats over and above those projected in the latest National Intelligence Estimates, and that we have done so because of certain recent U.S. technological developments which, if duplicated by the Soviet Union, could have a major impact on our Assured Destruction capability. I also stated that this capability is the vital first objective which must be met in full by our strategic nuclear forces under all foreseeable circumstances and regardless of the costs or difficulties involved.

Perhaps the worst possible threat the Soviets could mount against our Assured Destruction capability would be the simultaneous deployment of a force of several hundred

and a reasonably sophisticated

Our MIRV re-entry vehicle is already well along in development and we now propose to produce and deploy it in part of the MINUTEMAN force. We have also started development of an

defense missile. We believe the Soviets are developing an

defense missile,

Our Assured Destruction objective can be translated into a requirement for to kilopounds (KP) of delivered U.S. payload. Whether this requirement can be fulfilled by the programmed forces depends on the scale and technology of Soviet offensive and defensive forces, and on Soviet targeting doctrine. In the analysis which follows, it is assumed that the Soviets use all but of their ICBMs against our land-based missiles and that they use their remaining ICBMs, their SLBMs, and their bombers against other military and civilian targets. Reliabilities, yields, and CEPs of Soviet weapons are assumed to have conservative (pessimistic for the U.S.) values throughout. We have also assumed that the U.S. would have no missile defense during the period under consideration.

1. Base Case: No Soviet MIRVs, No Soviet ABMs, High Range of NIE on Missile Numbers

SOVIET MISSILE FORCES AND UNITED STATES RELIABLE PAYLOAD SURVIVING SOVIET FIRST STRIKE

	July 66	Jan. 70	July 72
Soviet ICBMs			
U.S. Reliable Surviving Payload (KP)			
MINUTEMAN I (hardness at lower estimated value of Plan I implementation)			
MINUTEMAN (at specification hardness)			
POLARIS			

The dates selected on the table are those for the initiation (July 1966) of Plan I, the completion of the LCF fixes (January 1970) and the completion of the LF fixes (July 1972). In both July 1966 and January

1/ Plan I implementation begins in July 1966, hence the surviving reliable KP for this date reflects no fixes of hardness deficiencies.

1970 the Soviets are assumed to execute high value (and high risk) attacks against launch control facilities. Such tactics maximize the expected Soviet kill of U.S. missiles. This factor has little effect in 1966 when the Soviet CEP is estimated at but in January 1970, with an CEP of attacks on launch control facilities have a major impact and account for the relatively low U.S. surviving payload. By July 1972, all surviving MINUTEMAN missiles could be launched by the airborne launch control center and the Soviets therefore would have to attack launch facilities.

In view of this apparent sensitivity to the availability of an airborne launch control center, an analysis was done for July 1968 assuming and the lower hardness values. Under these conditions, surviving land-based payload was reduced to With the POLARIS contribution, this is still more than enough for the Assured Destruction task. The Soviet attack in this situation was concentrated on the MINUTEMAN launch control centers and accounted for disablement of over 500 MINUTEMAN missiles. This emphasizes the importance of timely development and deployment of the Funding for both development and procurement of this system has been approved.

In summary, the table above shows that even if the MINUTEMAN I lower hardness estimates are used the Soviets cannot undermine our Assured Destruction capability without MIRVs or ABM or unless they build many more missiles than the high range of the NIE. It also shows that the basic invulnerability of the programmed force is only moderately sensitive to wide variations in MINUTEMAN hardness.

2. Intermediate Case: Soviet MIRV But No ABM

Here we assume that instead of continuing to deploy new missiles, as projected in the high NIE, the Soviets launchers in January 1969 and begin to retrofit MIRVs on the with as many as re-entry vehicles (each with a warhead yield of per booster. In effect, we give the Soviets the same IOC date for MIRV as we project for the United States. We also assume that the Soviets use the MIRVs against our land-based missile forces.

The table on the following page shows that unless the Soviets achieve a major improvement in the CEP of the hardness deficiencies in MINUTEMAN are of minor significance. The table shows that if the Soviets do achieve a CEP of 1200 a force of to could wipe out our land-based missile forces regardless of whether MINUTEMAN hardness deficiencies are corrected. The extreme sensitivity of these calculations to CEP is illustrated by the fact that a force of MIRVed with a CEP of , rather than , would (in case #4 shown on the table) leave surviving in 1971 rather than Nevertheless, a MINUTEMAN hardness level of PSI for the launch facilities and for the launch control facilities could provide us with some additional time to react to a Soviet MIRV deployment.

	Jul 66[1]	Jan 69	Jul 70	Jul 71	Jul 72
Soviet ICBMs					
Total					
U.S. Reliable Payload Surviving (KP)					
Land-Based					
1. No Soviet CEP improvement and MINUTEMAN I at					
2. No Soviet CEP improvement and MINUTEMAN at					
3. Very low Soviet CEP					
4. Very low Soviet CEP					
Sea-Based					
POLARIS					

In summary, a Soviet MIRV deployment could pose a serious problem to the survivability of our land-based force, provided they achieve CEP improvements on the same schedule we project for ourselves. Correction of the hardness deficiencies in MINUTEMAN would provide more time to react to such a deployment. A Soviet MIRV deployment alone would not affect our sea-based missile force which, in itself, could deliver

3. Extreme Case: Soviet MIRV With ABM

Here we assume that the Soviets deploy an anti-ballistic missile defense simultaneously with a MIRVed ICBM force. The ABM defense would consist of a force of about to missiles of the type we are now developing, deployed in such a way as to counter most effectively a "rank order" U.S. missile attack against Soviet cities. (Such a force so deployed would be able to engage targets, provided the U.S. attack was launched against Soviet cities in order of population, from the largest on down.) The Soviets MIRVed ICBM force would be the same as described in the Intermediate Case with a CEP. Again, we assume that the Soviets would use their against our land-based missiles. The results of these calculations are shown below:

	Jul 69	Jul 70	Jul 71	Jul 72	Jul 73
Soviet ICBMs					
Total					
Soviet ABM					
Reliable Area Interceptors					
U.S. Payload Surviving (KP)					
MINUTEMAN					
POLARIS					
U.S. Payload Penetrating (KP)					

This case illustrates the effect of a hypothetical -- very strong and very early -- but possible Soviet threat. The assumed Soviet ICBM forces reflect the maximum feasible MIRV capability. Although the assumed Soviet ABM defense does not include terminal defenses, its effectiveness is over-estimated since U.S. payloads are based on the currently programmed forces and U.S. tactics used in these calculations have not been optimized in the light of that defense. For example, if our attack were to be concentrated only on a part of the Soviet urban target system, the results would be much better for the U.S.

But, as I noted earlier, the simultaneous deployment by the Soviet Union of both a MIRVed ICBM force and an ABM defense would require major changes in U.S. strategic offensive forces since the MIRVs would degrade the effectiveness of our land-based missiles to a point where the ABM defense would become effective against the residual strategic forces, i.e., the sea-based POLARIS.

Accordingly, we should now take whatever steps are needed to place ourselves in a position to counter this threat if it should develop.

4. Alternative Hedges Against a Soviet MIRV-ABM Threat

In general, there are two broad classes of alternatives available to supplement our presently planned strategic offensive forces, if this should become necessary. The first is to proliferate hard, fixed-base missiles (such as MINUTEMAN) with relatively low cost per unit of alert payload in inventory, but high cost per unit of payload surviving a Soviet MIRVed, low-CEP, ICBM attack. The second includes sea and land based mobile systems, and "super hardened" and "hard defended" fixed missile sites, which have relatively high costs per unit of alert payload in inventory and are relatively insensitive to the Soviet offensive threat. The characteristics of four of these alternatives are shown below:

	Payload (pounds)	CEP (feet)	Range (n. mi.)
MINUTEMAN II			
Improved Capability Missile			
POLARIS A-3			
POSEIDON			

The ICM is assumed in the calculations which follow, to be deployed in new, silos. The POSEIDON would be retrofitted into POLARIS submarines.

The comparative ten-year costs of these systems, per thousand pounds of payload, are given in the following table for inventory missiles, alert missiles, and missile surviving the countermilitary attacks of the most likely (NIE) Soviet threat and an extrapolation of the high, unlikely, threat discussed in the "Extreme Case" above. In this calculation, the low Soviet attack inflicts 10 percent damage on U.S. land-based forces and the high Soviet attack 90 percent.

Ten-Year Costs Per Thousand Pounds of Payload ($ millions)

	In the Inventory	On Alert & Reliable	Reliable and Surviving: Low Soviet Attack	High Soviet Attack
MINUTEMAN II				
ICM				
POLARIS A-3				
POSEIDON				

The costs of POLARIS submarines and of MINUTEMAN facilities have already been incurred and hence are not included. The POSEIDON and ICM figures include development costs. The ICM costs are for a force of missiles, while the POSEIDON costs are based on retrofitting all 41 of the POLARIS submarines. The POLARIS and POSEIDON costs are based on the percent of the POLARIS force which we plan to have on station at all times.

If the Soviets and choose to emphasize ABM defense, or if they achieve capability, fixed-base missiles are generally preferred to mobile missiles. The Air Force is now studying the development of follow-on, land-based missiles of considerably increased size and payload which could be available in the time period with which we are concerned. One such missile, the above-mentioned ICM, could either be retrofitted to existing MINUTEMAN silos or be deployed in new, harder ( ) silos. Even against the MIRV threat, ICM might become attractive if it could be effectively defended at a sufficiently low cost.

The U.S. response to a Soviet deployment of an ABM defense unaccompanied by a would be the incorporation of appropriate penetration aids on our strategic missiles. Against area defense interceptors, chaff cloud penetration aids can be provided for U.S. missiles (so that an Assured Destruction capability is maintained) at a cost to us of less than 10 percent of the cost of an ABM defense to the Soviets. The lead time for the Soviets to mount an ABM defense is greater than the time for us to

A decision actually to deploy
If the Soviets do attempt a large ABM defense

we will still be able to

Against a combined Soviet MIRV-ABM threat, it is clear from the above table that the most efficient of the alternatives available to us would be to develop POSEIDON and retrofit it into POLARIS boats. The timing of the development and of the decision to produce and deploy would depend upon how this threat actually evolved. To bring out this problem in its starkest form, we have assumed for the analysis which follows the same Soviet threat used previously in the "Extreme Case". The numbers of additional surviving, reliable POSEIDON missiles needed to guarantee our Assured Destruction capability after FY 1970 are shown in the table below-- using first, ; already well along in engineering development and second, using the which is in the early stages of advanced development.

	Jul69	Jul70	Jul71	Jul72	Jul73
Soviet ICBMs					
Total					
Soviet ABM					
Reliable Area Interceptors					
Additional Surviving, Reliable POSEIDON Missiles Needed For Assured Destruction:					
Surviving, Reliable POSEIDON Missiles Added If:					

The last block of this table shows the number of survivable, reliable POSEIDON missiles which could be added to the force, time-phased for three different initial "operational availability dates (OAD)". In each case, 31 of the 41 POLARIS submarines would be retrofitted with POSEIDONs; to retrofit the remaining 10 boats would be too expensive and other alternatives such as the construction of new boats might be more attractive. Considering the fact that we are dealing here with an extremely high and very unlikely threat, I believe that an initial OAD date of would provide us an ample margin of safety. Last year I recommended the initiation of the POSEIDON development but without any fixed schedule. In the light of the foregoing analysis, I now recommend that its development schedule be tied to an OAD date of

5. Command and Control for POLARIS

A number of interim back-up facilities are presently under consideration, principally a ship-borne VLF system to be installed on the NECPA (National Emergency Command Post Afloat), and an airborne VLF system consisting of a number of relay aircraft to be operated on ground alert. The NECPA itself may be targetable, but if it survived it could probably relay a command to the submarines in the Norwegian Sea, provided a message were received from Headquarters, CINCLANT. The airborne system is of limited range ( ), requires a number of relays, and has a short endurance. Both of these systems would be useful for an interim relay capability, but neither constitutes a satisfactory execute capability for an Assured Destruction force. It is also possible that LF and HF stations might be eventually patched together to transmit an execute order, but this would be very difficult to do and no plan presently exists to do so.

A number of alternative systems are currently under study. However, it is not yet clear which of them offers the most promise for a survivable communications system, and a decision now to develop any one of them on a crash basis would be premature. Because of its importance to an Assured Destruction capability which depends heavily on a sea-based missile force, this study effort must and will continue to receive a very high priority.

D. Specific Recommendations on Major Issues

1. Qualitative Improvements to the MINUTEMAN Force

The Air Force now agrees that a 1971 force of 1,000 MINUTEMAN is adequate in context with the total U.S. strategic offensive forces now programmed and in the light of the expected (i.e., the NIE) threat. However, the Air Force also recommends the development of an Improved Capability Missile (ICM) for deployment in the FY 1973-74 time period as a replacement for some of the MINUTEMAN. As brought out in the foregoing analysis, the ICM must be considered in conjunction with the POSEIDON and in relation to the higher-than-expected Soviet threat. Accordingly, the principal issue concerning the MINUTEMAN force at this time is the production and deployment of new re-entry systems.

Last year it was decided to replace, eventually, all of the MINUTEMAN I with the MINUTEMAN II, which has much greater accuracy, payload, and versatility. MINUTEMAN II, for example, promises a single shot kill probability against a target of about for a reliably delivered warhead, compared with about for MINUTEMAN I. In addition, its greater re-targeting capability reduces the number of missiles that need to be programmed to achieve one reliably delivered warhead. Finally, its booster is compatible with MIRV. For these reasons I recommend that all the MINUTEMAN I's be replaced by end FY 1972.

The effectiveness of the MINUTEMAN force can be further improved by the production and deployment of two new re-entry systems which we now have under development. One of these, the promises a kill probability against targets of about compared with for the now being installed in the MINUTEMAN II. The other, the will contain three re-entry vehicles, thereby enabling each reliable MINUTEMAN booster to kill three geographically separated soft targets. Alternatively, the can carry a combination of
The MINUTEMAN with the represents such a major qualitative improvement that we have designated it the MINUTEMAN III. The recommended force is shown below:

(End Fiscal Year)

MINUTEMAN I
MINUTEMAN II
MINUTEMAN III

Specifically, I recommend:

a. Production and deployment of the and the re-entry vehicles at an FY 1967-71 cost of $122 million and $220 million, respectively. For FY 1967. $6.5 million will be required for the and $10.2 million for the for the procurement of long lead time items to ensure an IOC date of January 1969 for both systems.

b. II and III at a total FY 1967-71 cost of $48 million, of which $25.7 million will be required in FY 1967.

c. Production and installation of a

at a total FY 1966-71 cost of $92 million of which $1.1 million will be required in FY 1966 and $10.4 in FY 1967.

d. Production and installation of a

The total FY 1966-71 cost is estimated at $77 million of which $2.1 million will be required in FY 1966 and $13.4 million in FY 1967.

2. Maintenance of an Effective Manned Bomber Force in the 1970s.

The Air Force has proposed the procurement of a force of 210 (U.E.) FB-111As, the phaseout of the B-52 C-Fs, the procurement of SRAM for both the FB-111A and B-52 G-Hs, and the initiation of a contract definition phase for AMSA in FY 1967. For reasons discussed in the foregoing analysis, I make the following specific recommendations:

a. Approval of the Air Force proposal to procure an FB-111 force of 210 U.S. aircraft at a total FY 1966-71 systems cost, excluding SRAM, of $2.2 billion (including $1.9 billion for initial investment), with the first 15 aircraft to be operational by end FY 1969 and the full force operational by end FY 1971. Some $25 million will be required in FY 1966 and $201 million in FY 1967 for the development and procurement of the first 10 aircraft.

b. Development and production of the SRAM for the FB-111s only, at an FY 1967-71 cost of $250 million of which $32 million will be required in FY 1967. In addition, $37 million, including $9 million in FY 1967, is included in adapting the SRAM avionics for the B-52, thus retaining the option to deploy that missile on the B-52 G-Hs if that should prove desirable at some time in the future.

c. Phase out the B-52 C-F's in accord with the latest Air Force proposal. This will save approximately $1.4 billion in B-52 associated costs in the previously approved program plus $600-$800 million in modification costs avoided by not retaining the C-F's beyond FY 1972.

d. Phase out the B-58s by end FY 1971 as the FB-111 buildup is completed. In view of this recommendation, I recommend that we not go ahead with the installation of a Terrain Following Radar on the B-58, as proposed by the Air Force, with an FY 1967-71 saving of $97 million.

e. Disapproval of the Air Force proposal to initiate a contract definition phase for AMSA in FY 1967, but approval of continuation of advanced development work on the avionics so that adequate technology will be available when and if a decision for full scale development becomes necessary. This will require an additional $11 million in FY 1967. Prior year funds will be sufficient to complete advance development work on the propulsion system and the airframe.

3. The Character and Timing of a Deployment of an ABM Defense

As indicated in the foregoing analysis, there is no system or combination of systems within presently available technology which would allow us to deploy, now, an ABM defense with a reasonable expectation of keeping U.S. fatalities below tens of millions in a major Soviet first attack. Moreover, although our analysis suggests we could design an ABM defense with a high degree of effectiveness against a light attack such as the Chinese Communists may be able to mount some time in the late 1970s, the

Revised: 11 Jan 1966

timing of the threat is such that a production and deployment decision can be safely deferred for at least another year.

Accordingly, I recommend:

a. Disapproval of an Army proposal for a full scale deployment of NIKE-X at an FY 1967-71 cost of $12.7 billion and an FY 1967 cost of $212 million. The total investment cost of this proposal would be $15.7 billion and the annual operating costs about $861 million.

b. Continued development of the NIKE-X system, including the development of the recently approved, interceptor ( ), at an FY 1967 cost of $403 million. ($22 million of FY 1965 Emergency Funds have been provided to initiate the development.) This recommendation will give us an option to deploy a light anti-ballistic missile defense system designed against small or unsophisticated attacks if and when that should become necessary.

c. Continuation of the DEFENDER program designed to increase our knowledge of ballistic missile defense, at an FY 1967 cost of $130 million.

4. Production and Deployment of a New Manned Interceptor

The major issue in the entire anti-bomber defense area is the production and deployment of a new manned interceptor. The Air Force proposes a force of 12 squadrons (216 U.E. aircraft) of the F-12 to begin deployment in FY 1969 and complete deployment by FY 1973. Although this force would provide greatly increased combat effectiveness, its very great cost ($6.6 billion in FY 1967-71 period) would be consistent only with a decision to seek a very large and effective Damage Limiting program against the Soviet Union, and then only if the Soviets increased their bomber threat in both numbers and quality. Neither of these conditions is in prospect at this time. Accordingly, I recommend:

a. Continuation of the YF-12A flight test program with the aircraft now available. These aircraft have been equipped with the fire control and air-to-air missile systems, the performance of which is being improved with FY 1966 funds.

b. Continued study of the use of the F-111 in the manned interceptor role.

c. Continued efforts to define the Airborne Early Warning and Control System (AWACS) capability with a view towards the eventual development of such an aircraft.

d. Continued work on overland radar technology in support of the AWACS program.

e. Extension of the presently approved manned interceptor program through the FY 1967-71 period.

f. Continued development of the SAM-D terminal bomber defense system, primarily for field Army defense but also for potential use in CONUS defense if required.

These efforts will provide an option for improving our anti-bomber defenses, if they should be needed some time in the future.

5. The Future Size and Scope of the Civil Defense Program

All of our analysis indicates that a Civil Defense effort of at least the magnitude of our currently approved program ($150-200 million per year) would be an efficient component of any Damage Limiting program. However, we are still uncertain how many useful shelter spaces the present program will provide. We currently estimate the deficit at 74 million spaces by 1970, although the number could be much larger. If we were to eliminate this deficit, principally by providing dual-purpose shelter space in new construction, the total cost to the Government of a nation-wide fallout shelter program would be about $3.7 billion. Every increase of 10 percent above the estimated deficit could add $200-500 million to the cost of that program.

In any event, shelter construction lead time is shorter than that for the other components of a major Damage Limiting program. When and if we decide to deploy such a program, sufficient time will be available to provide any additional fallout shelters needed. Moreover, the prospect of an area missile defense for the entire country has reopened the question of the relationship between passive and active defense. If we were to decide to orient our Damage Limiting efforts primarily to the Nth country threat, it would appear that a large expansion of the Civil Defense Program would not be competitive with additions to the active defenses.

Accordingly, I recommend:

a. Disapproval of the Army's proposal to initiate a dual-purpose fallout shelter development program in FY 1967 at a cost of $10 million. A decision on such a program should be deferred until we know better the extent of the deficit and the direction which our Damage Limiting efforts will take.

b. Continuation in FY 1967 of a Civil Defense Program of essentially the same scope as proposed to the Congress for FY 1966, including: the small shelter survey effort; the Community Shelter Planning Program; architectural and engineering advice to private builders; the provision of ventilation kits to increase the capacity of existing shelter spaces, and the shelter provisioning program--at a total FY 1967 cost of $184 million.

6.

7. Accelerated Development of the POSEIDON Missile

For reasons discussed in the previous section of this memorandum, I believe it would be prudent at this time to place ourselves in a position to deploy a force of POSEIDON missiles in the early 1970s if required. Accordingly, I recommend:

a. The full scale, accelerated development of the POSEIDON missile on a schedule which would provide for its operational availability in 1970. The total cost of this development program is estimated at about $1.3 billion of which $300.5 million will be needed in FY 1967. No decisions on actual production or the number of POLARIS submarines to be retrofitted with this missile need to be made now -- installation of 352 missiles on 22 submarines would cost $700 million in addition to the development cost.

b. Initiation of engineering development of penetration aids for the POSEIDON, at a total estimated cost of about $50 million.

c. Disapproval at this time of the Air Force proposal to develop an ICBM (the development cost of which would approximate $1.3 billion), although study of this missile should continue.

Revised: 11 Jan 66

TABLE I

SUMMARY OF RECOMMENDED AND SERVICE PROPOSED 1/
STRATEGIC RETALIATORY FORCES

40

	FY 61	FY 62	FY 63	FY 64	FY 65	FY 66	FY 67	FY 68	FY 69	FY 70	FY 71	FY 72	FY 73	FY 74
Bombers 2/														
B-52	555	615	630	630	630	600	555 (600)	510 (555)	435 (420)	345 (315)	255	255	255	255
B-EB-47	900	810	585	450	225	0	0	0	0	0	0	0	0	0
B-58	40	80	80	80	80	80	78	76	74	72	0	0	0	0
FB-111A	0	0	0	0	0	0	0	0	15	105	(70) 210	(68) 210	(66) 210	(64) 210
Total Bombers	1495	1505	1295	1160	935	680	633 (678)	586 (631)	524 (554)	522 (537)	465 (535)	465 (533)	465 (531)	465 (529)
Air Launched Missiles														
HOUND DOG	216	460	580	580	560	540	540	540	520	520	350 (520)	350 (520)	350 (510)	350 (510)
SRAM a/	-	-	-	-	-	-	-	-	-	150 (1570)	450 (2638)	525 (2638)	525 (2638)	525 (2638)
ATLAS	28	57	126	113	0	0	0	0	0	0	0	0	0	0
TITAN	0	21	67	108	54	54	54	54	54	54	54	54	54	54
MINUTEMAN I	0	0	160	600	800	800	700	550	400	250	100	0	0	0
MINUTEMAN II	0	0	0	0	0	80	300	450	550	570	600	700	700	700
MINUTEMAN III	-	-	-	-	-	-	-	-	50	180	300	300	300	300
POLARIS	80	96	144	240	464	512	656	656	656	656	656	656	656	656
Total ICBM/POLARIS	108	174	497	1061	1318	1446	1710	1710	1710	1710	1710	1710	1710	1710
Other														
QUAIL	244	392	392	392	392	390	390	390	390	390	390	390	390	390
KC-135 b/	400	440	500	580	620	620	620	620	620	620	620	620	620	620
KC-97	600	580	340	240	120	0	0	0	0	0	0	0	0	0
RB-47	90	45	30	30	27	14	-	-	-	-	-	-	-	-
RC-135	0	0	0	0	0	0	10	10	10	10	10	10	10	10
SR-71	0	0	0	0	2	14	25	25 (34)	25 (34)	25 (34)	25 (34)	25 (34)	25 (34)	25 (34)
REGULUS	17	17	17	7	0	0	0	0	0	0	0	0	0	0
PACCS														
KC-135	0	0	17	18	24	27	27	27	27	27	27	27	27	27
B-47	0	18	36	36	0	0	0	0	0	0	0	0	0	0
Alert Force Weapons c/														
Weapons														
Megatons														

1/ The forces proposed by the Services, where different from the Recommended Forces, are shown in parentheses.
2/ CSAF proposes proceeding with Contract Definition Phase for the Advanced Manned Strategic Aircraft in FY 1967 with an option for an Initial Operational Capability in FY 1974.
a/ Short Range Air-to-Surface Missile (SRAM) is a new (non-add) line item. Recommended line includes SRAM for FB-111 only. Service proposed includes SRAM for FB-111 and B-52.
b/ Retains one U.E. tanker per bomber and includes tankers for TAC rapid deployment.
c/ Recommended entries include SRAM on B-111 after 1969. Service Proposed entries include SRAM on B-52 G and H series as well as on B-111 after 1969. Including about 10 percent of POLARIS force in transit to and from patrol areas.

ISSUING OFFICE

Revised: 5 April 1966

TABLE II

SUMMARY OF
RECOMMENDED AND SERVICE PROPOSED 1/ CONTINENTAL
AIR AND MISSILE DEFENSE FORCES

	FY 1961	FY 1965	FY 1966	FY 1967	FY 1968	FY 1969	FY 1970	FY 1971	FY 1972	FY 1973	FY 1974
Air Defense											
Manned Interceptors											
Air Force											
F-101	384	270	270	270 (264)	198 (258)	108 (252)	108 (240)a/	108 (216)a/	108 (180)a/	108 (126)a/	108 (126)a/
F-102	393	235	111	34	0	0	0	0	0	0	0
F-104	0	36	36	36 (60)b/	24 (60)	24 (60)	24 (42)	24 (42)	24 (0)a/	24 (0)a/	24 (0)a/
F-106	270	234	228	216	210	204 (198)	198	192 (180)a/	186 (180)a/	180 (126)a/	174 (126)a/
F-12	0	0	0	0	0	0 (18)c/	0 (54)	0 (108)	0 (162)	0 (216)	0 (216)
Navy											
F-6	25	0	0	0	0	0	0	0	0	0	0
Air National Guard											
F-86	250	0	0	0	0	0	0	0	0	0	0
F-89	250	180	100	0	0	0	0	0	0	0	0
F-100	66	0	0	0	0	0	0	0	0	0	0
F-102	130	208	313 (324)	403	403	403	403	403 (360)a/	403 (324)a/	403 (252)a/	403 (252)a/
F-104	61	0	0	0	0	0	0	0	0	0	0
SAM Missile Forces											
BOMARC (on launchers)	238	180	172	164	156	148 (81)a/	140	132	124	116	108 S/1 413
NIKE HERCULES (Reg.)	2,340	1,548	1,152	1,152	1,152	1,152	1,152a/	1,152a/ (1,285)a/	1,152a/ (1,080)a/	1,152a/ (324)a/	1,152a/ (0)a/
(ARNG)	108	936	936	936	936	909	832 (909)	802 (760)a/	772 (630)a/	742 (216)a/	712 (72)a/
HAWK (Reg.)	0	576	576	576	576	576	560 (576)	544 (576)	528 (576)	512 (576)	496 (576)
(ARNG)	0	0	0	0	0	0	0	0	0 (216)a/	0 (1,512)a/	0 (2,452)a/
NIKE-AJAX (ARNG)	1,520	0	0	0	0	0	0	0	0	0	0
SAM-D	0	0	0	0	0	0	0	0	0 (1,056)	0 (1,672)	0 (2,448)

1/ The forces proposed by the Services, where different from the Recommended Forces, are shown in parentheses.
a/ Service proposed force change contingent on phase-in of new system.
b/ The JCS recommend force increase pending availability of F-104 C&D aircraft from Program III.
c/ The JCS support the requirement for a follow-on manned interceptor. CSAF recommends the F-12 as the appropriate aircraft for deployment. CSA, CNO, and CMC consider that an option for the F-12 should be retained but, based on the estimated threat, the decision for production and deployment of either the F-12 or F-111 can be deferred.

Revised: 5 April 1966

RECOMMENDED AND SERVICE PROPOSED 1/ CONTINENTAL
AIR AND MISSILE DEFENSE FORCES (Cont'd)

	FY 1961	FY 1965	FY 1966	FY 1967	FY 1968	FY 1969	FY 1970	FY 1971	FY 1972	FY 1973	FY 1974
Control and Surveillance Systems											
Control Systems											
Combat Centers	8	7	5	5	5	5	5	5	5	5	5
Direction Centers	20	15	13	13	11	11	11	11	11	11	11
BUIC Centers	0	0	14	12 (15)	14 (16)	19 (20)	19 (20)	19 (20)	19 (20)	19 (20)	19 (20)
SAM Fire Coordination Centers	10	25	19	22	22	22	22	22	22	22	22
Surveillance and Warning Systems											
Search Radars	182	162	158	151	151	151	151	151	151	151	151
Search Radars (ANG)	6	6	6	6	6	6	6	6	6	6	6
Height Radars	313	309	282	275	275	275	275	275	275	275	275
Gap Filler Radars	112	92		91	91	91	91	91	91	91	91
DEW Radar Stations	67	39	39	39	39	39	39	39	39	39	39
DEW Extension Systems											
Aircraft	50	20	0	0	0	0	0	0	0	0	0
Ships	5	0	0	0	0	0	0	0	0	0	0
Off Shore Radars											
Aircraft	60	67 (65)	67 (65)	67 (65)	67 (65)	67 (65)	67 (32)a/	67 (15)a/	67 (0)a/	67 (0)a/	67 (0)a/
Ships	21	19	0	0	0	0	0	0	0	0	0
AWACS	0	0	0	0	0	0	0 (10)b/	0 (31)b/	0 (42) b/	0 (42) b/	0 (42) b/
Missile and Space Defense											
Anti-Ballistic Missile Systems											
NIKE-X Sprint Missiles	0	0	0	0	0	0	0 (244)c/	0 (2,256)c/	0 (5,407)c/	0 (7,192)c/	0 (8,560) c/
Surveillance & Warning Systems											
BMEWS Sites	2	3	3	3	3	3	3	3	3	3	3
OTH Radar Sites Transm/Rec.	0	2/5	2/5	3/6	4/6	4/6	4/6	4/6	4/6	4/6	4/6
SPASUR Radars Transm/Rec.	0	4/7	4/7	4/7	4/7	4/7	4/7	4/7	4/7	4/7	4/7
Space Track Radar Sites	0	3	3	3	4	4 (4)	4 (7)	4 (7)	4 (7)	4 (7)	4 (7)

1/ The forces proposed by the Services, where different from the Recommended Forces, are shown in parentheses.
a/ Service proposed force change contingent on phase-in of new system.
b/ JCS recommend continued development. CSAF believes this force level will be required regardless of the force level or type of interceptors deployed during this time period. CSA, CNO and CMC defer decision on deployment pending program evaluation.

Revised: 5 April 1966

TABLE III

SUMMARY OF PREVIOUSLY APPROVED, SERVICE PROPOSED AND RECOMMENDED
TOA FOR STRATEGIC RETALIATORY FORCES (IN $MILLIONS) a/

	FY 1966	FY 1967	FY 1968	FY 1969	FY 1970	FY 1971	Total FY 1967-71
Strategic Bombers							
B-52s							
Previously Approved	891	785	803	742	706	(705)	3741
Service Proposed b/ c/	892	825	843	855	608	365	3496
Recommended b/ c/	851	724	601	502	376	302	2505
B-58s							
Previously Approved	103	95	98	96	95	(95)	479
Service Proposed	111	121	114	96	95	95	521
Recommended	104	103	98	78	76	30	385
FB-111							
Previously Approved	0	0	0	0	0	0	0
Service Proposed c/ f/	28	337	557	625	282	178	1979
Recommended c/	29	368	610	658	290	178	2104
B-EB-47							
Prev. App., Ser. Prop'd & Rec.	55	0	0	0	0	0	0
KC-135							
Prev. Appd	228	246	248	241	241	(241)	1217
(Ser. Prop'd & Rec. b/	257	288	250	243	243	243	1267
Surface-to-Surface Missiles							
MINUTEMAN							
Previously Approved	947	813	660	617	597	(432)	3119
Service Proposed f/	980	1114	902	732	624	432	3804
Recommended	1002	1037	830	694	578	353	3492
TITAN							
Previously Approved	85	65	63	62	62	(62)	314
Serv. Prop'd & Recommended	85	76	69	72	69	65	351
POLARIS d/							
Previously Approved	796	861	809	905	898	(898)	4371
Service Proposed	796	854	883	808	707	838	4090
Recommended	770	791	806	858	728	840	4023
Other (less KC-135)							
Prev. App., Ser. Prop'd & Rec.	438	113	118	117	117	(117)	582
Command, Control, & Communications e/							
Support Prev. App., Ser. Prop'd & Rec	85	78	74	70	70	(70)	362
Previously Approved	905	877	855	853	846	(846)	4277
Service Proposed	902	870	844	821	792	776	4103
Recommended	902	865	820	807	778	756	4026
Total							
Previously Approved	4533	3930	3727	3704	3632	(3467)	18460
Service Proposed d/	4629	4676	4654	4439	3607	3179	20555
Recommended	4578	4443	4276	4099	3325	2954	19097

FOOTNOTES:

a/ Previously Approved are from the FYFS&FP, April 30, 1965. FY 1971 funds have not yet been added to the FYFS&FP; estimates shown in parentheses. The military pay raise effective September 1, 1965 is not included.

b/ Southeast Asia costs are included for the B-52 and KC-135 in FY 66 and FY 67.

c/ Service Proposed includes SRAM R&D in the B-52 line with appropriate investment and operating costs contained in both the B-52 and FB-111 lines. The Recommended funding includes all SRAM costs in the FB-111 line exept for $37 million for R&D for B-52 SRAM avionics. Though not shown in the Previously Approved funding in this table, $163 million has been previously approved for SRAM R&D in Program VI, Research and Development.

d/ Though not contained in this table, $1.1 billion is recommended for POSEIDON R&D in Program VI, Research and Development. Associated with this is a reduction in POLARIS R&D of about $275 million included in the POLARIS Service Proposed and Recommended lines. In addition, the Navy has proposed $500 million during FY 69-71 for initial POSEIDON deployment.

e/ Funding changes for command, control and communications activities are not included in this table.

f/ The Air Force has also proposed during FY 67-71, Research and Development of $1.0 billion for an Improved Capability Missile to replace MINUTEMAN and $1.1 billion for Advanced Manned Strategic Aircraft, AMSA.

TABLE IV

SUMMARY OF PREVIOUSLY APPROVED SERVICE PROPOSED 1/ AND RECOMMENDED TOA (IN $MILLIONS) FOR CONTINENTAL AIR AND MISSILE DEFENSE

Air Defense Interceptors	FY66	FY67	FY68	FY69	FY70	FY71	FY67-71
Century Series							
Active							
Prev. Approved	316	280	251	202	189		
Service Proposed	292	246	246	230	220	198	1,140
SecDef Rec.	315	276	249	197	185	180	1,089
ANG							
Prev. Approved	102	104	104	109	118		
Service Proposed and SecDef Rec.	103	102	105	108	112	112	539
Advanced Interceptor							
F-12							
Prev. Approved	0	0	0	0	0	0	0
Service Proposed	-	480	1371	1620	1570	1543	6584
SecDef Rec.	0	0	0	0	0	0	0
SAM Missile Forces							
BOMARC							
Prev. Approved and SecDef Rec.	12	13	11	11	10	10	55
Service Proposed	12	13	11	9	3.	2	38
NIKE-HERCULES							
Regular Army							
Prev. Approved	142	131	130	131	127	127	646
Service Proposed and SecDef Rec.	126	103	101	101	98	98	501
ARNG							
Prev. Approved, Service Proposed and SecDef Rec.	65	66	66	67	66	66	331
HAWK							
Prev. Approved, Service Proposed and SecDef Rec.	10	9	8	8	8	8	41
SAM-D							
Prev. Approved and SecDef Rec.	-	-	-	-	-	0	0
Service Proposed	-	-	-	-	-	546	546
Surveillance and Warning							
Air Defense							
Ground-Based							
Prev. Approved	508	474	431	406	400	400	2111
Service Proposed	511	517	484	439	432	431	2303
SecDef Rec.	472	455	429	400	391	391	2066
AWACS							
Prev. Approved and SecDef Rec.	3	0	0	0	0	0	0
Service Proposed	7	58	65	75	185	96	479
Missile and Space Defense							
Space Defense System							
Prev. Approved,	7	9	9	9	9	9	45
Service Proposed and SecDef Rec.	10	12	12	12	10	10	56
Space Radars							
Prev. Approved	52	49	45	44	41	41	220
Service Proposed	48	49	45	44	41	35	214
SecDef Rec.	46	43	39	34	30	31	177
BMEWS							
Prev. Approved,	77	61	65	65	65	65	321
Service Proposed and SecDef Rec.	78	58	57	62	57	57	291

SUMMARY OF PREVIOUSLY APPROVED SERVICE PROPOSED 1/ AND RECOMMENDED TOA (IN $MILLIONS)
FOR CONTINENTAL AIR AND MISSILE DEFENSE (CONT'D)

Missile and Space Defense (Cont'd)	FY66	FY67	FY68	FY69	FY70	FY71	FY67-71
OTH Radars							
Prev. Approved, Service Proposed and SecDef Rec.	15	41	19	7	7	7	81
NIKE-X 3/							
Prev. Approved	0	0	0	0	0	0	0
Service Proposed	-	212	1268	2688	3940	3917	12025
SecDef Rec. 2/	0	0	0	0	0	0	0
Civil Defense							
Prev. Approved and SecDef Rec. 4/	107	184	185	153	153	153	828
Service Proposed	194	369	508	577	602	566	2622
Command, Communications, and Support							
Prev. Approved,	450	445	437	432	434	434	2182
Service Proposed SecDefRec	452	447	439	433	435	435	2189
Totals							
Prev. Approved	1866	1866	1761	1644	1627	-	-
Service Proposed	1923	2782	4805	6480	7786	8127	29980
SecDef Rec. 2/	1814	1811	1719	1593	1563	1558	8244

1/ Costs are aggregated and do not reflect full variety of Service positions.
2/ Will be affected by decisions to be made later this year.
3/ Does not include $1.3 billion in NIKE-X R&D funds for FY 66-70.
4/ Reflects Congressional FY 1966 Appropriation as opposed to Previously Approved and Recommended TOA of $194 million for the Civil Defense program.