

EXECUTIVE OFFICE OF THE PRESIDENT  
OFFICE OF TELECOMMUNICATIONS POLICY

WASHINGTON, D.C. 20504

October 21, 1970

*Alaska*  
DIRECTOR

Honorable Dean Burch  
Chairman  
Federal Communications Commission  
Washington, D. C. 20554

Dear Mr. Chairman:

In checking the list of the Frequency Assignments to Government Radio Stations, the Department of Defense has noted that four official Armed Forces Radio Television Services (AFRTS) broadcast outlets in Alaska operated by the Department of the Air Force are not contained therein. The four stations, all in isolated locations, disseminate information, provide entertainment, and promote education for military personnel. Pertinent details of those broadcast operations are:

Frequency 570 kHz, 10A3 emission, 250 watts power at Champion Air Force Station (AFS) 64°41'N 156°42'W. This station also serves the Galena and Kalakaket Creek AFS areas.

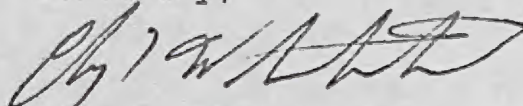
Frequency 1240 kHz, 10A3 emission, 10 watts power at Site Love, 64°58'N 147°54'W.

Frequency 1550 kHz, 10A3 emission, 50 watts power at Sparrevohn, 61°07'N 155°36'W.

Frequency 1570 kHz, 10A3 emission, 10 watts power at Murphy Dome, 64°57'N 148°21'W.

The views of the Commission are requested as to the foregoing operations.

Sincerely,



Clay T. Whitehead



OFFICE OF THE SECRETARY OF DEFENSE  
WASHINGTON, D. C. 20301

12 OCT 1970

Honorable Clay T. Whitehead  
Director of Telecommunications Policy  
Executive Office of the President  
Washington, D. C. 20504

Dear Mr. Whitehead:

For some time, the Department of the Air Force has been operating official Armed Forces Radio Television Service (AFRTS) broadcast outlets in Alaska. However, the stations are not reflected in the list of Frequency Assignments to Government Radio Stations. The stations disseminate information, provide entertainment, and promote education for military personnel stations at the following isolated locations:

Frequency 570 kHz, 10A3 emission, 250 watts power is requested for use at Champion Air Force Station (AFS) 64°41'N 156°42'W. This station also serves the Galena and Kalakaket Creek AFS areas.

Frequency 1240 kHz, 10A3 emission, 10 watts power is requested for use at Site Love, 64°58'N 147°54'W.

Frequency 1550 kHz, 10A3 emission, 50 watts power is requested for use at Sparrevohn, 61°07'N 155°36'W.

Frequency 1570 kHz, 10A3 emission, 10 watts power is requested for use at Murphy Dome, 64°57'N 148°21'W.

It is recommended that the Federal Communications Commission be asked to concur in the Department of the Air Force requirement for authority to assign the above frequencies to AFRTS outlets as indicated.

Sincerely,

for LOUIS A. deROSA  
Assistant to The Secretary of Defense  
(Telecommunications)





OFFICE OF THE SECRETARY OF DEFENSE  
WASHINGTON, D.C. 20301

12 OCT 1970

Honorable Clay T. Whitehead  
Director of Telecommunications Policy  
Executive Office of the President  
Washington, D. C. 20504

Dear Mr. Whitehead:

The Department of Defense has a requirement for a radio frequency to be used by the Department of the Air Force for an official Armed Forces Radio Television Service (AFRTS) FM/Stereo broadcast outlet on Johnston Atoll. This station will disseminate information, provide entertainment, and promote education for military personnel stationed at this isolated location. Because of the remoteness and limited off-duty recreational facilities, there is a need to supplement AFRTS radio and television services.

It is recommended that the Federal Communications Commission be asked to concur in the use of and nominate one of the FM Broadcast Channels 201-300 (88.1-107.9 MHz).

The following technical data is submitted: Bandwidth/Emission 256F9; Antenna Single bay circularly polarized; Antenna Site Johnston Atoll; Antenna Coordinates 1644N16931W; Power 50 watts.

Sincerely,

LOUIS A. deROSA  
Assistant to The Secretary of Defense  
(Telecommunications)



OFFICE OF THE SECRETARY OF DEFENSE  
WASHINGTON, D.C. 20301

29 SEP 1970

Mr. William E. Plummer  
Office of Telecommunications Policy  
Executive Office of the President  
Washington, D.C. 20504

Dear Mr. Plummer:

This is in response to your letter, dated August 26th, regarding the "inquiry into policy to be followed in future licensings of facilities for overseas communications" (FCC Docket #18875).

The Department of Defense as a matter of policy supports actions on the part of the Federal Communications Commission which stimulate and encourage the growth and expansion of telecommunications throughout the world. This position is based in a large measure on the policy of placing primary reliance on the common carriers for international communications needs of the Department of Defense. It is essential in times of crises, including the threat of nuclear attack, that a balanced combination of reliable means of communications with overseas areas be readily available. The Department of Defense supports previously stated views that high capacity cable systems and satellite systems provide the best mix of complementary rather than competitive systems for meeting the needs of national security and defense communications.

The Department of Defense will, of course, continue to respond to the Commission with regard to specific applications by carriers on a case by case basis within the framework of these general policy views.

Sincerely,

LOUIS A. deROSA

Assistant to The Secretary of Defense  
(Telecommunications)



~~077~~  
DOD

8/20/70

To: Dr. Myron Tribus

From: Tom Whitehead

FYI

OTP

AUG 18 1970

Dear Mr. Froehke:

As recently appointed Director of the newly established Office of Telecommunications Policy, pending my swearing in, I am reviewing the staffing structure and personnel situation of this new office in the Executive Office of the President. The charter of this new office includes the supersession and expansion of the functions formerly performed by the Office of the Director of Telecommunications Management, OETM. The Department of Defense has for several years provided valuable professional personnel to support the staff of the previous Directors. These personnel were made available pursuant to provisions of the Presidential Memorandum on "Establishment of the National Communications System," dated August 21, 1963.

In my role as Director of the Office of Telecommunications Policy, I will exercise those duties formerly assigned to the Director of Telecommunications Management in connection with the NCS. The Presidential Memorandum of August 21, 1963, provides in part that, in addition to staff regularly assigned, the Director is authorized to arrange for the assignment of communications and other specialists from any agency by detail or temporary assignment. As I have noted, we have enjoyed the benefit of the services of a number of outstanding military officers in support of Executive Office functions in the past. I am writing now to indicate that, after careful consideration, I have concluded that we might well be able to employ the services of enlisted men and company grade officers, as well as those of field grade, on detail from your Department to the Office of Telecommunications Policy now being established. I am fully confident that there are available a number of well-qualified, professionally trained and experienced enlisted men and company grade officers who could provide to our mutual advantage professional services in this office.

I consider the proposal mutually advantageous from two perspectives: this office will have a broader range of personnel from which to select



competent and particularly skilled professional assistance; the Department of Defense will enjoy both economic and command personnel effectiveness through our utilization of lower ranking officers and enlisted men. We would, of course, expect to continue as appropriate to call upon high-ranking experts in the communications and related fields.

As appropriate individuals may be brought to our attention, my office will be in touch with the Department concerning the detail of such individuals. I look forward to a continuation of the amicable and efficient relationship that has been enjoyed by my predecessors and your Department in the past.

Sincerely,

Clay T. Whitehead

Honorable Robert F. Froehlke  
Assistant Secretary of Defense (Administration)  
Department of Defense  
The Pentagon  
Washington, D. C. 20301

SDoyle:lmc

cc: Mr. Whitehead  
Central Files  
J. R. O'Connell

Clearances:

J. R. O'Connell \_\_\_\_\_

ELECTRONIC NEWS  
Monday, August 10, 1970

## *Louis deRosa Moving In To Top New Telecom Slot*

By HEATHER M. DAVID

WASHINGTON — Communications expert Louis deRosa will be sworn in Tuesday into the Pentagon's new top telecommunications post.

The former Philco-Ford and ITT vice-president was picked for the new position of assistant to the secretary of Defense (Telecommunications) some time ago (EN, June 8). Official disclosure was postponed until Civil Service-Paper work was completed.

Mr. deRosa's appointment has been greeted warmly by industry representatives who welcomed a qualified communicator with industry experience in the important post.

While the position now carries the title assistant to the Secretary of Defense, the Defense blue ribbon panel has recommended it be upgraded to assistant Secretary of Defense and given responsibility for automatic data processing management.

No decision has been announced by Defense Secretary Melvin Laird. However, even in its present concept the office is expected to have an important influence on the future direction of the \$2 billion-\$3 billion a year Defense communications mar-

ket.

Mr. deRosa will be a focal point for monitoring and coordinating service activities as well as Defense Communications Agency programs and advise the Secretary of Defense on budget and procedural matters.

During his civilian career Mr.

deRosa has been Philco-Ford corporate vice-president for engineering and research, technical director of ITT's U.S. Defense Space Group, vice-president and general manager ITT Federal Laboratories, San Fernando, Calif.; vice-president, engineering for ITT Communications Systems, Inc., and ITT vice-president, Electronics Defense Laboratory at Nutley, N.J.



Defense

5/21/78

To: Dr. Henry Kissinger  
ATTN: Dr. Larry Lynn

From: Tom Whithead

The people at A&T thought  
you might be interested in  
this release.

Respectfully,

OTW: [illegible]

5/21/70

*Defense*

To: Dr. Lee DuBridge

From: Tom Whitehead

The people at AT&T thought  
you might be interested in  
this release.

Attachments

CTWhitehead:ed/jm



Dr. Clay T. Whitehead  
The White House

Dear Tom:

Enclosed is a statement released today by Mr. H. I. Romnes in response to the article which appeared in today's Washington Post with respect to the Bell System policy on military contracting. If you have any questions about this matter, please do not hesitate to call me.

Sincerely,

E. B. Crosland

5/20/70

STATEMENT BY H. I. ROMNES, CHAIRMAN OF THE BOARD  
AMERICAN TELEPHONE AND TELEGRAPH COMPANY

The Bell System's policy on military contracting remains unchanged. We intend to fulfill our contract responsibilities for the Safeguard anti-ballistic missile system. As we have said many times before, we do not seek military work and do not seek to expand the amount we have. We believe, however, that we have a duty to undertake such defense work as the Government asks us to undertake and for which our qualifications are unique. In line with this policy, when other organizations have demonstrated their capability to assume direct contract responsibility for portions of such undertakings or for follow-on development activities, we have urged that they be provided the opportunity to do so.

This is a long-standing policy on our part and has been fully understood and accepted by the Department of Defense for a great many years. Neither the intensity of current dissent or the burdens of our defense assignments provide occasion to change it. Like all Americans, we would, of course, welcome the day when this work might no longer be necessary.



*Comm*

J 4 10 1973

Honorable Eberhardt Rechtin  
Assistant Secretary of Defense  
(Telecommunications)  
Washington, D.C. 20301

Dear Dr. Rechtin:

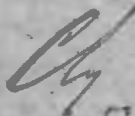
This is with reference to your letter of January 10, 1973, which concurred in the adoption of the FCC Proposed Report and Order to provide for licensing and use of Emergency Locator Transmitters (ELTs), subject to consideration and adoption of as many of the recommendations proposed by the Departments of Army, Navy and Air Force as may be practicable now and in the future. My letters of February 6, 1973, to the Chairman of the Federal Communications Commission (FCC) and the Administrator, Federal Aviation Administration (FAA), also pertain.

The views and suggestions of the Department of Defense have been studied by the FCC and FAA with results as set forth in the enclosed letters.

I consider that this matter has been pursued as far as practicable for the present and that further action should be held in abeyance pending the results of experience with the use of ELTs by the civil sector.

Your cooperation in making possible the use of ELTs and the frequency 243 MHz on a widespread basis in the interest of safety of life and property is appreciated sincerely.

Sincerely,



Clay T. Whitehead



Enclosure

cc: Administrator, FAA  
Chairman, FCC

WDeanJr/dtb 5/11/73

cc: DO Chron, Do records, FMD, Monthly Reading, Eva ✓

DOD

CONTENTS

Index and Highlights

- 1. Change
- 2. History
- 3. Summary

**SAFEGUARD      INFORMATION**

Key Safeguard

Public Statements

- 1. Deputy Secretary of Defense David Packard to the House Armed Services Committee, March 9, 1970
- 2. President Richard M. Nixon, "U.S. Foreign Policy for the 1970's," February 28, 1970
- 3. Secretary of Defense Melvin R. Laird, "Fiscal Year 1971 Defense Program and Budget," February 23, 1970
- 4. Secretary of Defense Melvin R. Laird to the Senate Armed Services Committee and Senate Appropriations Defense Subcommittee, February 24, 1970
- 5. Deputy Secretary of Defense David Packard to the Senate Armed Services Committee and Senate Appropriations Defense Subcommittee, February 24, 1970
- 6. Director of Defense Research and Engineering Dr. John W. Funder, Jr., to the Senate Armed Services Committee and Senate Appropriations Defense Subcommittee, February 24, 1970
- 7. Joint Chiefs of Staff, "Report on the Status of the Joint Chiefs of Staff," February 24, 1970
- 8. Joint Chiefs of Staff, "Report on the Status of the Joint Chiefs of Staff," February 24, 1970

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Comments and Reports





## CONTENTS

### A. Safeguard Highlights

1. Charts
2. History
3. Glossary

### B. Why Safeguard

### C. Public Statements

1. Deputy Secretary of Defense David Packard to the House Armed Services Committee, March 9, 1970
2. President Richard M. Nixon, "U.S. Foreign Policy for the 1970's," February 18, 1970
3. Secretary of Defense Melvin R. Laird, "Fiscal Year 1970 Defense Program and Budget," February 20, 1970
4. Secretary of Defense Melvin R. Laird to the Senate Armed Services Committee and Senate Appropriations Defense Subcommittee, February 24, 1970
5. Deputy Secretary of Defense David Packard to the Senate Armed Services Committee and Senate Appropriations Defense Subcommittee, February 24, 1970
6. Director of Defense Research and Engineering Dr. John S. Foster, Jr., to the Senate Armed Services Committee and Senate Appropriations Defense Subcommittee, February 24, 1970
7. Soviet Defense Minister Marshal A. Grechko, from an article in Pravda, February 23, 1970

### D. Questions and Answers

# CONTENTS

## Assignment Highlights

1. Charge
2. History
3. Overview

## Why Safety?

## Public Safety

1. Defining Safety: The National Commission on the Causes and Prevention of Accidents, March 1, 1970
2. President Richard M. Nixon, "U.S. Foreign Policy for the 1970s," February 18, 1970
3. Secretary of Defense James M. Parsons, "Report on the Status of Defense Research and Development," February 18, 1970
4. Secretary of Defense James M. Parsons, "Report on the Status of Defense Research and Development," February 18, 1970
5. Secretary of Defense James M. Parsons, "Report on the Status of Defense Research and Development," February 18, 1970
6. Secretary of Defense James M. Parsons, "Report on the Status of Defense Research and Development," February 18, 1970
7. Secretary of Defense James M. Parsons, "Report on the Status of Defense Research and Development," February 18, 1970

## Assignment and Report

## SAFEGUARD HIGHLIGHTS

Calling it "the most important step in the development of a system of defense, it is the first step in the development of a system of defense," Secretary of Defense Melvin R. Laird has asked the House for authorization to proceed with a modified Phase II program for the development of a defense program.

### SAFEGUARD HIGHLIGHTS

Secretary Laird said that the program is a part of the United States defense program and is a part of the defense program. He said that the Chinese program, although it is a part of the defense program, is progressing much more slowly than the United States program. He said that the Chinese program is progressing much more slowly than the United States program. He said that the Chinese program is progressing much more slowly than the United States program.

The Modified Phase II program for Fiscal Year 1971 requests Congress to authorize for employment of 10,000 additional Safeguard defense personnel. The program also requests for FY 1971 the authorization of 10,000 additional personnel for the development of the program. The program also requests for FY 1971 the authorization of 10,000 additional personnel for the development of the program.

The FY 1971 request for the program also includes development of the program. The program also includes development of the program. The program also includes development of the program. The program also includes development of the program.

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## SAFEGUARD HIGHLIGHTS

Calling it, "The minimum we can and must do, both in cost and in system development, to fulfill the President's national security objectives," Secretary of Defense Melvin R. Laird has asked the Congress for authorization to proceed with a Modified Phase II Safeguard Anti-Ballistic Missile defense program.

Secretary Laird noted that the Soviet strategic threat to the United States is even more substantial and troublesome now than a year ago, and that the Chinese ICBM program, although delayed a year, appears to be progressing toward a test launch in the near future. He said, "Given President Nixon's determination to postpone additional actions on new U. S. offensive systems this year in order to advance prospects for success at the Strategic Arms Limitation Talks, further progress on defensive Safeguard deployment becomes the only viable course available in Fiscal Year 1971."

The Modified Phase II program for Fiscal Year 1971 requests Congressional authorization for deployment of only one additional Safeguard defense site near Whiteman AFB, Missouri. The program also recommends for FY 1971 the authorization to undertake long lead-time advanced preparation work for five other sites without a deployment commitment being made for any of these five sites. The five sites are Northeast, Northwest, National Command Authority (Washington, D. C.), Warren Air Force in Wyoming, and Michigan/Ohio.

The FY 1971 request for Congressional authorization also includes deployment of additional Sprint missiles at the original Phase I sites near Grand Forks, North Dakota, and Malmstrom AFB, Montana. This will require purchase of long lead-time missile components, limited land acquisition, and some silo construction. The missiles themselves need not be procured yet.

Expenditures in the proposed FY 1971 program would be less than \$100 million more than expenditures needed to proceed with the Phase I deployment which has already been approved by Congress for FY 1970 initiation. FY 1971 expenditures have been specifically restricted to a minimum level as a part of the Administration's anti-inflation efforts.

The Modified Phase II program -- although a minimum effort -- maintains the President's option to move, if necessary further toward a 12-site Full Phase II Safeguard defense, which is designed to meet, as necessary, (1) the growing Soviet threat to our Minuteman, our bomber deterrent forces and the National Command Authority, (2) the potential Chinese threat to our population, and (3) the accidental-launch threat. On the other hand, the President also has the option to curtail the deployment if threat developments or negotiations permit. The Modified Phase II program continues orderly, controlled, progress toward the President's objectives while maintaining optimum Presidential flexibility. If needed, and later authorized, a Full Phase II defense could be available in the late 1970s.







# MODIFIED PHASE II SAFEGUARD DEFENSE

(FY 71 RECOMMENDATION)



○ AUTHORIZE ADVANCED PREPARATION

# THE THREAT

ESTIMATED DATE  
AS OF FEB 70

CHINESE ICBM FIRST TEST ..... 1970

CHINESE ICBM EARLIEST OPERATIONAL DATE ..... 1973

SOVIET ICBM's OPERATIONAL ..... OVER 1100

SOVIET SS-9's OPERATIONAL OR  
UNDER CONSTRUCTION ..... OVER 275

SOVIET Y CLASS SUBMARINES WITH SLBM's OVER 9

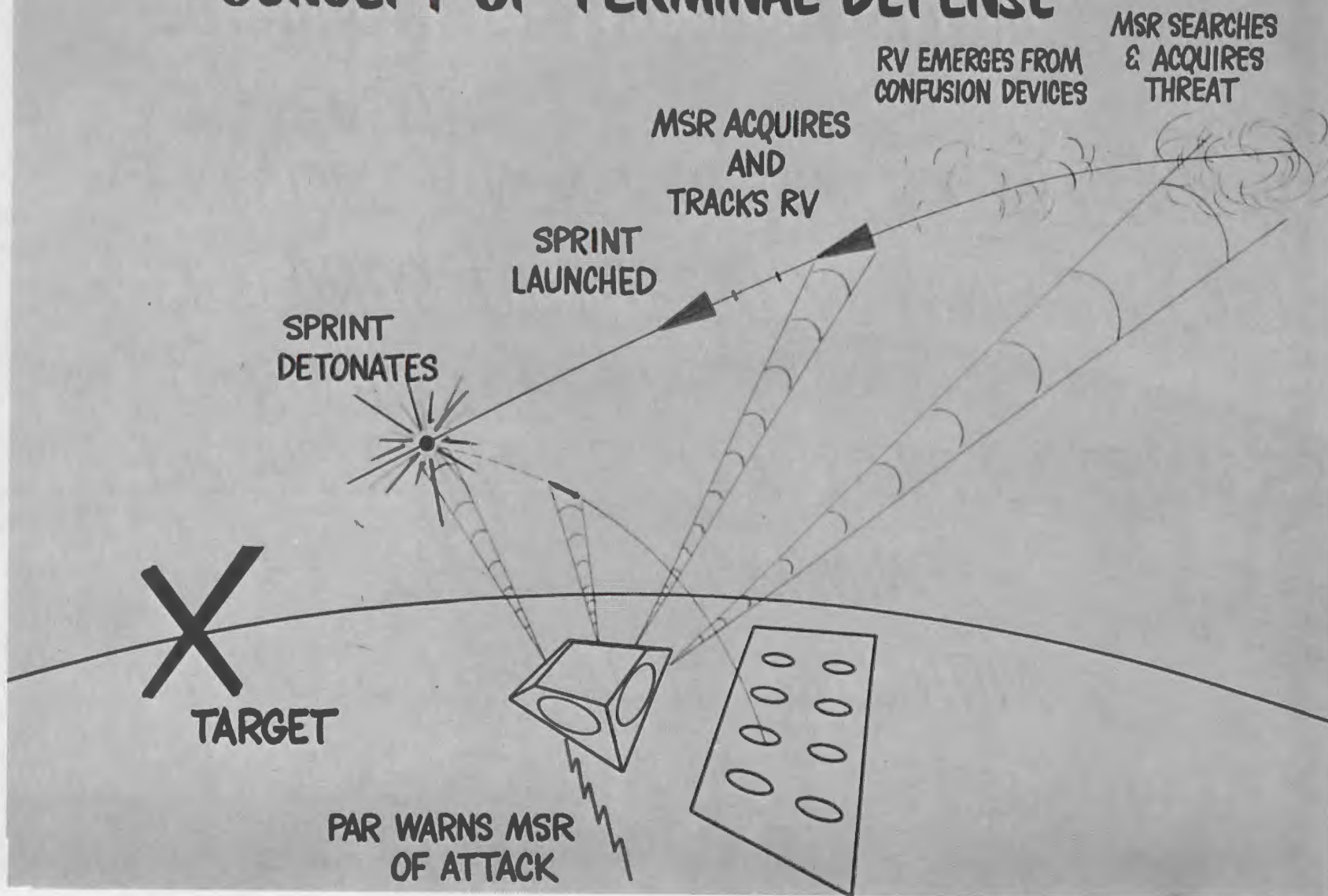


## JUSTIFICATION FOR MODIFIED PHASE II SAFEGUARD

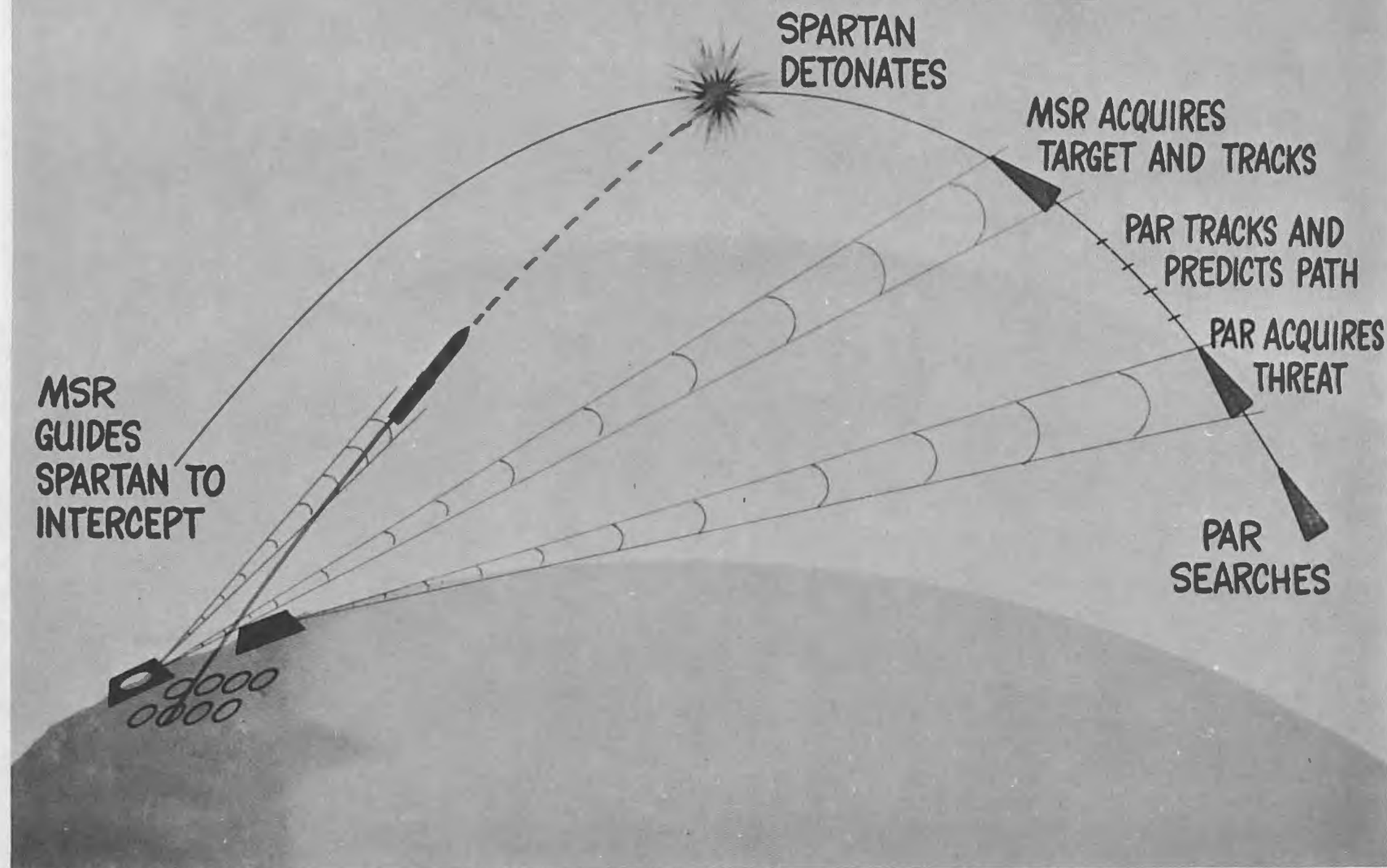
- CHINESE THREAT IS CONTINUING
- SOVIET THREAT IS GROWING
- PROVIDES FLEXIBILITY TO MEET CHANGES  
IN THE THREAT
- RESPONDS TO THREAT AT MINIMUM COST
- PROVIDES A NON-PROVOCATIVE, DEFENSIVE  
MEASURE
- TECHNICAL PROGRESS CONFIRMS  
CONFIDENCE IN SAFEGUARD SYSTEM



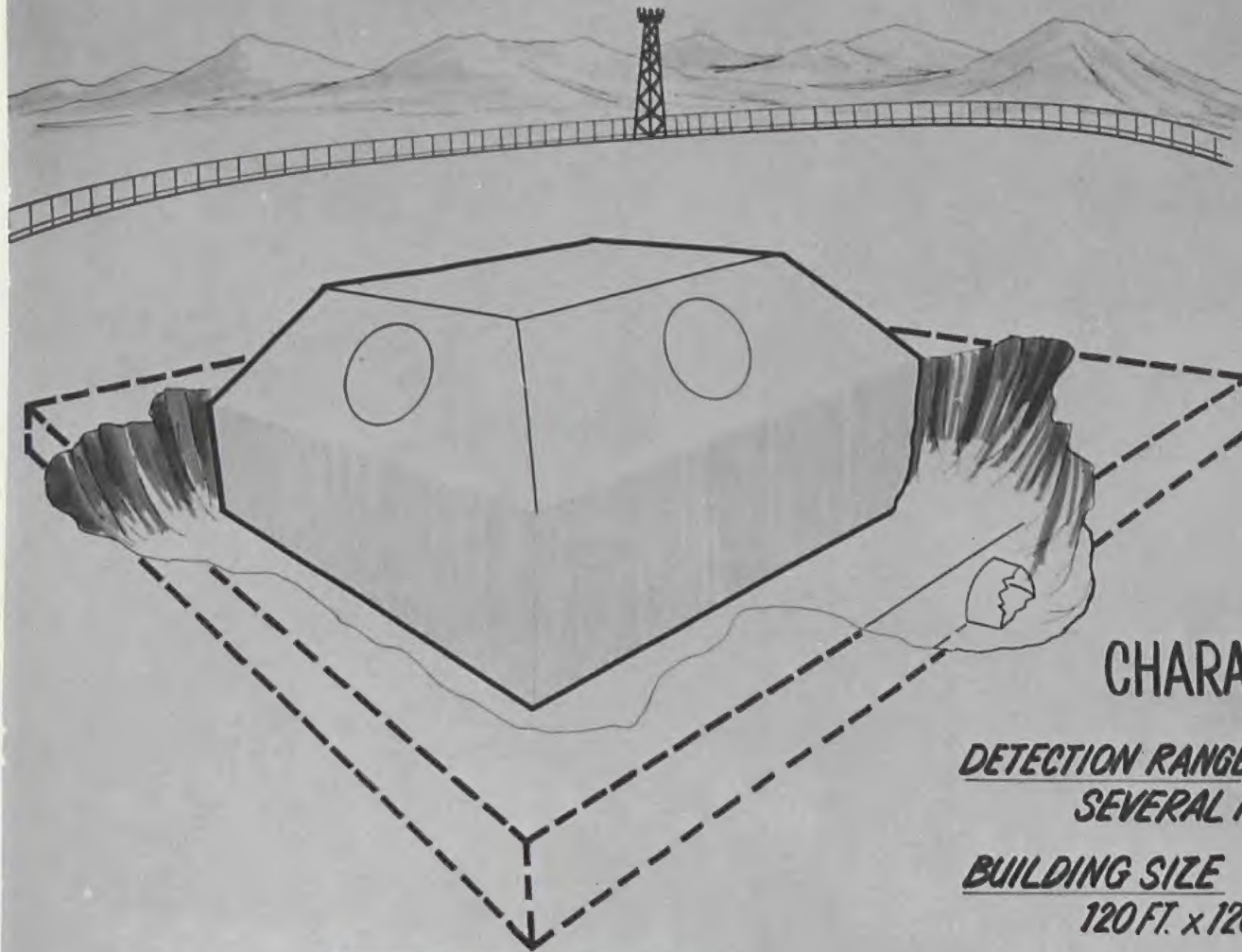
# CONCEPT OF TERMINAL DEFENSE



# CONCEPT OF AREA DEFENSE



# MISSILE SITE RADAR



PROTOTYPE UNIT AT  
KWAJALEIN TEST AREA

## CHARACTERISTICS

DETECTION RANGE

SEVERAL HUNDRED MILES

BUILDING SIZE

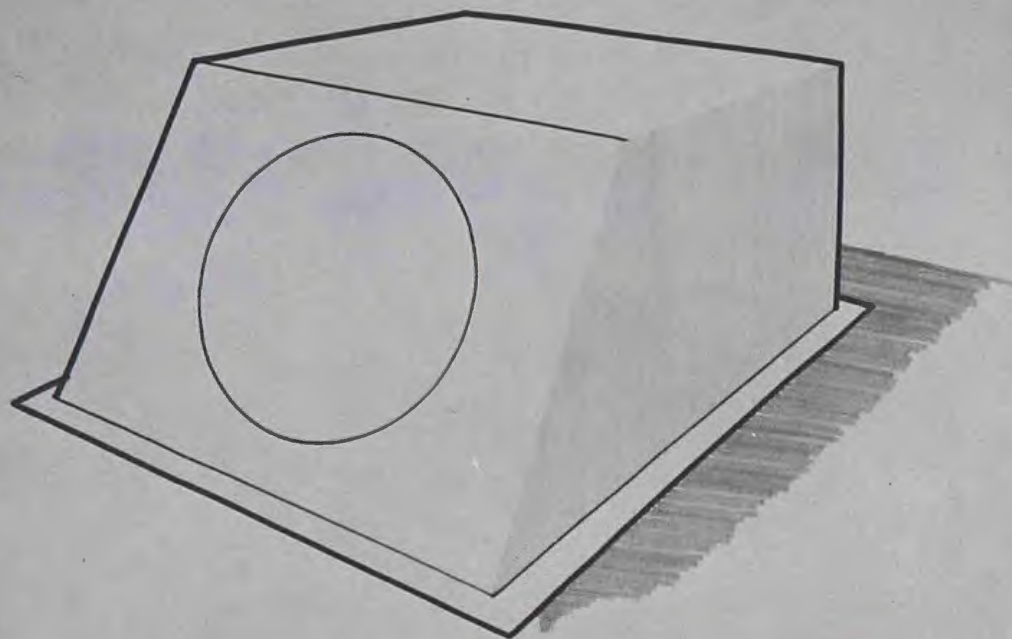
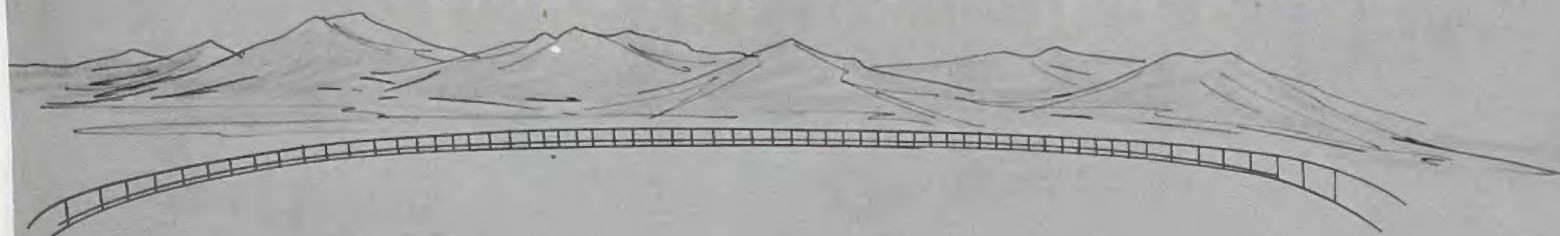
120 FT. x 120 FT. x 40 FT. ABOVEGROUND

ANTENNA : DIAMETER

13.5 FT.



# PERIMETER ACQUISITION RADAR



**DEVELOPMENT STATUS**  
COMPONENTS TESTED FIRST RADAR  
TO BE ASSEMBLED AND TESTED  
ON OPERATIONAL SITE

## CHARACTERISTICS

***DETECTION RANGE***

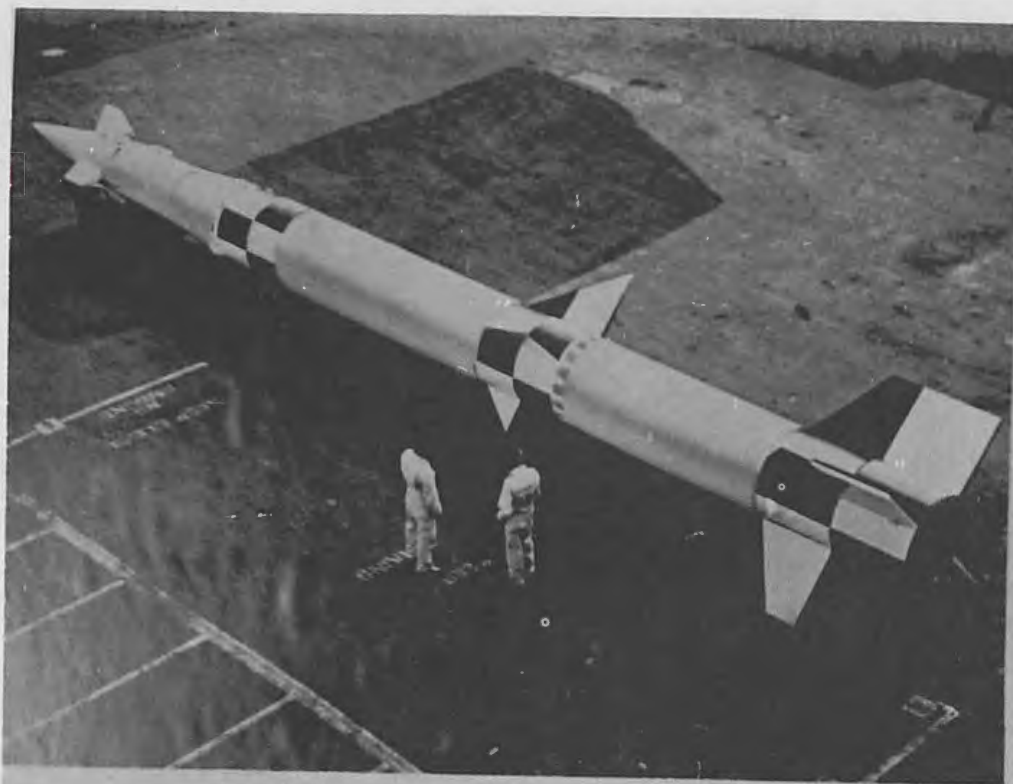
***GREATER THAN 1000 MILES***

***BUILDING SIZE***

***211 FT. x 209 FT. x 130 FT. HIGH***

***ANTENNA: DIAMETER***

***112 FT.***

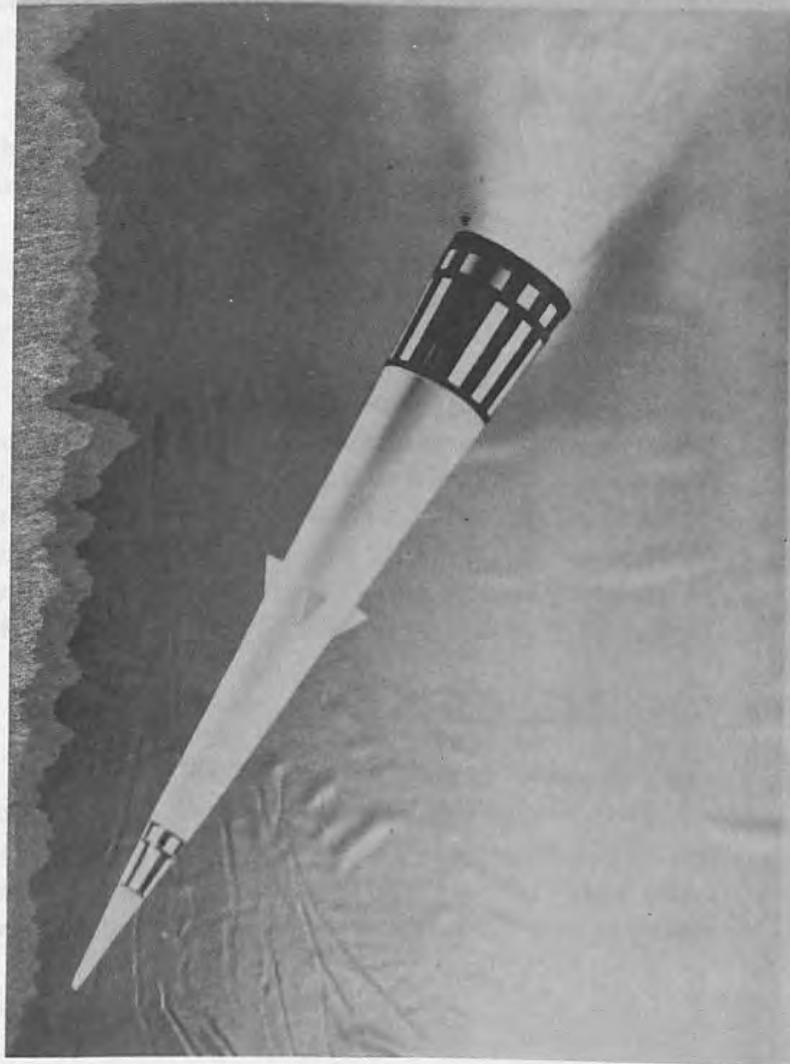


**FLIGHT TESTS IN PROGRESS**  
**ADDITIONAL WARHEAD DEVELOPMENT NECESSARY**



**LENGTH 55 FEET**  
**RANGE SEVERAL HUNDRED MILES**

**SPARTAN**



**SUCCESSFUL FLIGHT TESTS**

**LENGTH      27 FEET**

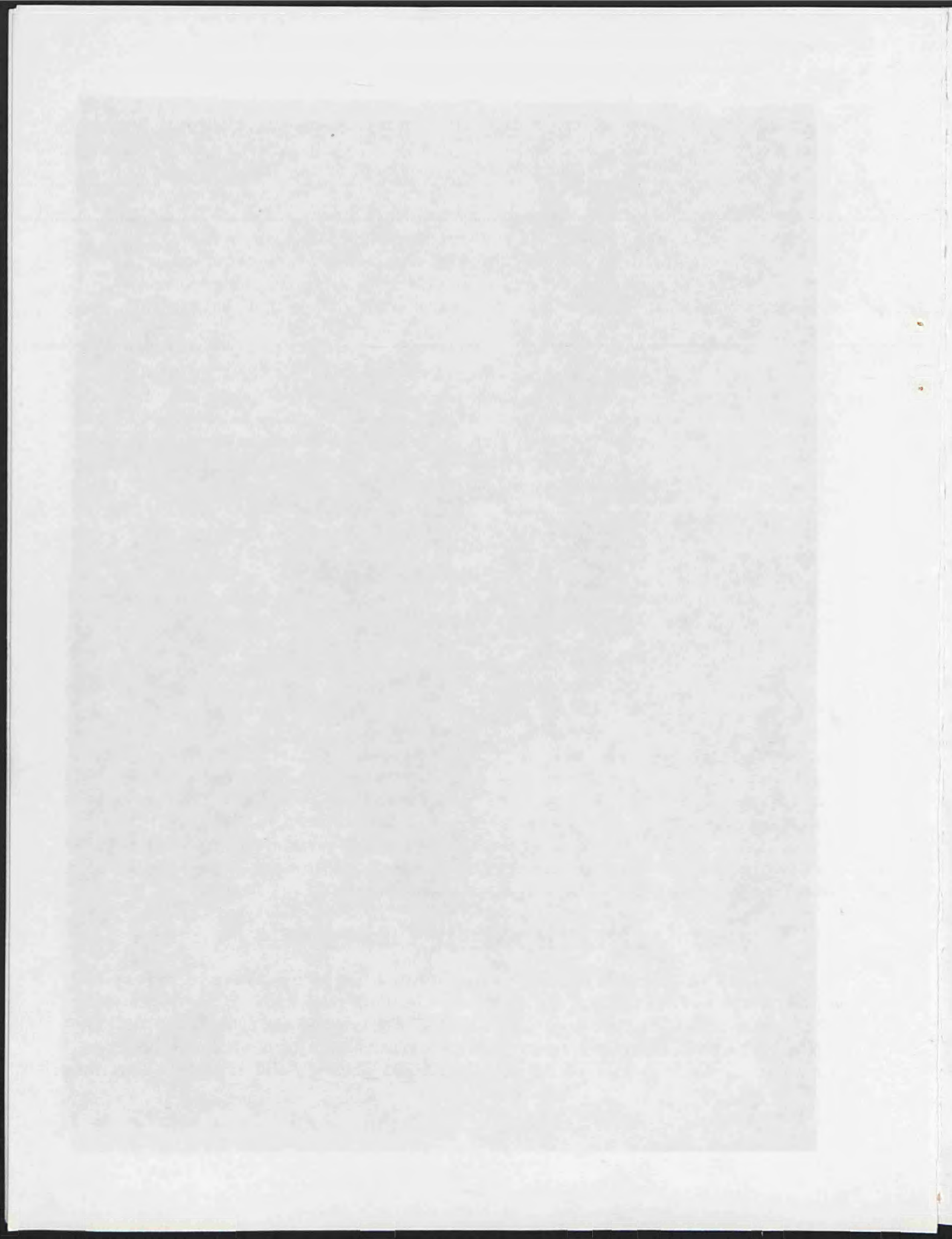
**DIAMETER    4.5 FEET**

**RANGE        APPROX. 25 MILES**

**SPRINT**







## HISTORY

The SAFEGUARD System now being deployed by the United States Army is an outgrowth of 15 years of ballistic missile defense research and development work by the Army and its contractors. The development program began in the mid-1950s and was known as the Army's NIKE ZEUS project. Under the NIKE ZEUS program, the Army developed a large acquisition radar, smaller target tracking and missile tracking radars, a discrimination radar to sort real warheads from decoys and the ZEUS interceptor missile.

In 1963 the NIKE ZEUS program was reoriented to the NIKE-X project. Phased array radars, which are extremely fast in operation and able to handle numerous targets simultaneously, replaced the less versatile conventional radars and the SPRINT missile was added as a second interceptor. The following year, in 1964, testing began on a test model of the first phased array radar. The two phased array radars in the SAFEGUARD System, the Missile Site Radar (MSR) and the Perimeter Acquisition Radar (PAR), are outgrowths of technology developed in the test model.

In 1967, a deployment plan was developed using some of these components which would provide light protection for the entire United States using a small number of strategically located installations.

In September 1967, Secretary McNamara announced a decision to go ahead on this deployment known as SENTINEL Ballistic Missile Defense System.

In February 1969, President Nixon reviewed the SENTINEL deployment and in March 1969, he announced a modified, phased deployment concept. The components of the system, i. e., the radars and missiles, are the same as before, but the manner in which they will be deployed is different. The name SAFEGUARD was given to the new system to denote a basic change in its concept of deployment to protect our deterrent force and to assure that this change was widely recognized and understood.

## SAFEGUARD SYSTEM COMPONENTS

The SAFEGUARD System is basically made up of two types of radars (the Missile Site Radar and the Perimeter Acquisition Radar); two types of interceptor missiles (the long range SPARTAN and the short range SPRINT); and a high speed computer system which permits man to control the radars and conduct the system's complex engagement planning and execution functions.



### Perimeter Acquisition Radar

An effective defense depends on SAFEGUARD's ability to detect attacking warheads at long ranges. For this purpose, the PAR is designed to detect targets at ranges of over 1000 miles. Because PAR is a "phased array radar" its beams are steered electronically instead of through the use of heavy, moving antennas. Instead of a conventional dish-type antenna, this phased array radar has thousands of small antennas built into the face of the PAR building. When an attacking warhead is detected by the PAR, its computers determine the ballistic trajectory and the probable impact point and relay this information to the appropriate MSR.

The PAR will be housed in a concrete structure some 200 feet on a side at the base and 130 feet tall. It will be hardened against nuclear effects. Also located with the PAR will be administrative buildings and an underground power plant. The first PAR will be assembled at an operational site near Grand Forks, N. D.

### Missile Site Radar

The other phased array radar employed by the system is the Missile Site Radar (MSR). This radar has a detection range of several hundred miles. It operates in a manner similar to the PAR but provides much more precise target data. The MSR also readies interceptors for launch and guides them to intercept. Generally, SPARTAN and SPRINT missiles are located at the MSR site. The MSR and its data processing equipment will be housed in an underground building about 230 feet square. A turret approximately 75 feet tall housing the radar faces will project above ground. The MSR will have an underground power plant and other support facilities associated with it. A prototype MSR has been installed at Kwajalein Missile Range, in the Marshall Islands, where operational tests are being conducted.

### SPARTAN

The SPARTAN is a long range, more powerful version of the ZEUS missile, which was fired successfully many times, and in its system test phase made several successful interceptions of ICBMs fired from the West Coast in 1962 and 1963. The ZEUS also successfully demonstrated a satellite intercept capability. The first SPARTAN was fired on March 30, 1968, at Kwajalein.

The 55-foot-long, three stage, solid propellant missile is launched from an underground silo. After the first stage completes burning, it separates and the second stage ignites. The missile is guided to its target by the MSR and system computers. The third stage, which is normally used



outside the atmosphere, is ignited on command from the ground. SPARTAN will carry a nuclear warhead in the megaton range. Development of the warhead is being carried out by the Atomic Energy Commission.

### SPRINT

SPRINT is a 27-foot-long, two stage, solid propellant missile designed to make intercepts at a closer range. It has an extremely high acceleration and is able to reach intercept altitude within seconds after launch. It is also guided to its target by the MSR and system computers. The SPRINT is ejected from an underground silo by a gas propelled piston and its booster ignites once the missile is in the air. The SPRINT will have a nuclear warhead in the kiloton range. It was first test fired on November 15, 1965, and has undergone a large number of test launches.

### Data Processing Equipment

Each MSR and PAR will have large capacity data processing centers. These high speed, digital computers process and evaluate the vast amount of information accumulated by the radars and provide the means for man to control the system. The data processing center is composed of computer processors, memory banks, displays, tapes and discs. A significant part of the SAFEGUARD development is the formulation of so-called "software" or computer programs.

### A SAFEGUARD ENGAGEMENT

The SAFEGUARD System can provide two types of defense, area defense and terminal defense.

-- Area defense is accomplished by intercepting warheads above the atmosphere at ranges of several hundred miles. Hence, each site can protect large areas of the country, hundreds of miles across.

-- Terminal defense is a concentrated defense of a small area such as a group of MINUTEMAN silos or a bomber base.

The first element of the SAFEGUARD System to detect an attack would be the PAR. This radar would provide initial track data for SAFEGUARD firing units. The MSR would refine this tracking data if required, and control the flight of SPARTAN missiles to intercept the incoming warheads. The SPARTAN's kill, a nuclear explosion to destroy or disable the incoming warhead, would occur well out of the atmosphere (Area Defense). A second type of missile, the SPRINT, would be launched to destroy warheads which have penetrated the SPARTAN defense or which may have been allowed to pass it for sorting purposes (Terminal Defense). Engagements would be

almost entirely automated except for the necessary human decisions which must be made by command authority. All engagement activities are subject to manual human intervention at any time.

The nuclear warheads used in the SPARTAN and SPRINT missiles have elaborate safety devices to prevent a nuclear explosion until after the missile is launched and reaches a safe altitude.



## SAFEGUARD GLOSSARY

1. ABM. Anti-Ballistic Missile: A defensive missile designed to intercept and destroy incoming enemy missiles before they can reach their intended target. Spartan and Sprint, as well as the USSR's Galosh are ABMs.
2. AEC. Atomic Energy Commission: The Federal Agency charged with providing SAFEGUARD warheads.
3. Area Defense: A defense designed to protect a large geographical area (population). In SAFEGUARD, accomplished by long-range Spartan intercepts above the earth's atmosphere. A single SAFEGUARD site can cover an area of 600 x 900 miles.
4. CPR. Chinese People's Republic.
5. DOD. Department of Defense.
6. FOBS. Fractional Orbit Bombardment System: A System employing a missile that puts a warhead into a fractional orbit (less than one complete orbit prior to re-entry) rather than the purely ballistic trajectory associated with ICBMs.
7. Hardware: The actual components of the SAFEGUARD system, i. e. the missiles, radars, data processors, and system support equipment.
8. Intercept: The act of meeting an incoming ICBM with an ABM in such a manner that the incoming warhead is destroyed before it can reach its target.
9. ICBM. Intercontinental Ballistic Missile: Any offensive missile with a range in the region of 6000 miles.
10. Malmstrom and Grand Forks: Location of Phase I SAFEGUARD sites at Malmstrom Air Force Base, North Dakota, and Grand Forks Air Force Base, Montana. These sites, in the midst of Minuteman missile fields, are designed to protect a portion of our Minuteman deterrent force.
11. MIRV. The missile payload system having several warheads each with the ability of being programmed independently of the other to hit a different pre-selected target.



12. MRV. The missile payload system having several warheads each being ejected at the same general target area. The pattern of landing is called the "footprint."
13. MSR. Missile Site Radar: Provides precise target data for final engagement and guides either the Spartan or Sprint missile to intercept.
14. NCA. National Command Authority, Washington, D. C. That portion of the Federal Government required to make the necessary political/military decisions in time of an emergency condition caused by an enemy nuclear attack.
15. PAR. Perimeter Acquisition Radar: The long-range radar used to detect and track incoming enemy missiles.
16. Phase I: The initial phase of the planned SAFEGUARD deployment, consisting of the sites at Malmstrom and Grand Forks Air Force Bases. Designed to meet (1) the Soviet threat to our Minuteman deterrent force, (2) the potential Chinese threat to our population, and (3) the accidental-launch threat.
17. Phase II: The plan for the remainder of the SAFEGUARD deployment. Purposely flexible, it currently consists of the request to construct one additional site beyond Phase I (Whiteman Air Force Base) and commence preliminary work at five others.
18. RSL. Remote Sprint Launch: An additional Sprint launching site that is some distance away from the MSR site.
19. RV. Re-entry Vehicle: That portion of the incoming enemy missile, containing the warhead(s) specially designed to withstand the extreme stresses of re-entry into the earth's atmosphere.
20. SALT. Strategic Arms Limitation Talks: US/Russian negotiations that are exploring the possibilities of strategic arms limitations.
21. SLBM. Submarine Launched Ballistic Missile.
22. Software: Stored computer programs that carry out the automated tasks associated with detecting, tracking, identifying and intercepting an incoming enemy missile.

23. Spartan: The long-range ABM designed to destroy or disable incoming warheads well out of the atmosphere. Associated with Area Defense. Range - several hundred miles.
24. Sprint: The short-range ABM used for Terminal Defense. Can fly 10 miles in 10 seconds. Range - approximately 25 miles.
25. Terminal Defense: A concentrated defense of a small area such as a Minuteman site, accomplished by Sprint missiles.
26. Whiteman: Whiteman Air Force Base, Missouri, the site of the proposed modified Phase II SAFEGUARD site. Also in a Minuteman field.
27. Y-Class Submarine: The Russian counterpart of the U. S. Navy's POLARIS Submarines.

11 The first thing I saw when I stepped out of the car was a bright, sunny day. The temperature was perfect, and the air smelled fresh. I took a deep breath and felt a sense of relief. The car was parked in front of a large, modern building with many windows. I looked at my watch and saw that it was 10:00 AM. I had time to spare before my appointment.

12 The car was parked in front of a large, modern building with many windows. I looked at my watch and saw that it was 10:00 AM. I had time to spare before my appointment. The building was made of glass and steel, and it looked very impressive. I walked towards the entrance and saw a sign that said "RECEPTION". I went to the reception desk and asked for the name of the person I was supposed to see. The receptionist looked at her computer screen and told me that the person was in a meeting. She gave me a card with the person's name and the location of the meeting. I thanked her and went to the meeting.

13 The person I was supposed to see was a man in a suit. He was sitting at a desk and looking at some papers. I walked up to him and introduced myself. He looked at me and said, "Hello, my name is Mr. Smith. I am the manager of the company. I have been looking for someone like you for a long time. I have seen your resume and I am impressed with your experience. I would like to talk to you more about the job. Can you come back here tomorrow at 2:00 PM?" I thanked him and said that I would be there. He smiled and said, "Great. See you tomorrow."

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WHY

SAFEGUARD



## SAFEGUARD

### I. Safeguard Objectives

President Nixon, on March 14, 1969, announced the following objectives for Safeguard:

-- "Protection of our land-based retaliatory forces against a direct attack by the Soviet Union."

-- "Defense of the American people against the kind of nuclear attack which Communist China is likely to be able to mount within the decade."

-- "Protection against the possibility of accidental attacks from any source."

He further elaborated that:

-- "We will provide for local defense of selected Minuteman missile sites and an area defense designed to protect our bomber bases and our command and control authorities."

-- "By approving this system, it is possible to reduce U. S. fatalities to a minimal level in the event of a Chinese nuclear attack in the 1970s, or in an accidental attack from any source."

Thus, rather than focusing on a single purpose, Safeguard has been and continues to be designed to achieve several objectives against a combination of Soviet and Chinese threats.

The President also stated that "this program will be reviewed annually from the point of view of (a) technical development, (b) the threat, and (c) the diplomatic context including any talks on arms limitation," so as to "insure that we are doing as much as necessary but no more than that required by the threat existing at that time."

Participating in the review this year were the President's Foreign Intelligence Advisory Board, which made its own review of the threats we face, and the Department of Defense, including the Joint Chiefs of Staff, the President's Defense Program Review Committee, and the National Security Council, which conducted a searching review of alternative courses of action.



## II. Results of the Review

This review showed:

-- Technical progress on all the components of the Safeguard system has been satisfactory.

-- The threat has increased. The Soviet Union continues to construct intercontinental ballistic missiles and missile-carrying submarines at a steady pace, at least matching our predictions of last year, and continues a very active research and development program on new weapons. Communist China has not so far as we know tested an ICBM in the past year. The earliest possible date for an operational Chinese ICBM capability is a year later than we estimated last year. However, we believe they are now in a position to begin tests within a few months, and it is simply a matter of time until they have an operational ICBM. They almost certainly could have ICBMs by the time a full 12-site U. S. ABM system could become operational.

-- The initiation of the Strategic Arms Limitation Talks was obviously not jeopardized by approval of the first phase of Safeguard. Until and unless we reach an agreement in SALT, we must continue those programs vitally necessary for our national security. Otherwise the Soviets may feel that the mere conduct of SALT can stop our strategic weapons programs, thus reducing Soviet incentives for meaningful negotiations.

In our review, we considered several alternatives, including canceling the Phase I Safeguard deployment approved last year or continuing Phase I only with additional research and development. However, in view of the continued growth of the Soviet threat and the prospect of Chinese deployment of an ICBM force in the mid-1970s, we could not justify a year's delay in taking additional measures to protect ourselves against these dangers.

We also examined the effectiveness of the full 12-site Safeguard system in protecting against the Chinese threat and in defending Minuteman. Safeguard Phase II is expected to have a capability more than adequate to cope with the Chinese threat in the late 1970s. This judgment takes into account the technical problems China must face in order to develop effective devices to penetrate our defenses and also the countermeasures the U. S. could take to nullify such efforts.



We also considered criticisms of the effectiveness of Safeguard for the defense of our Minuteman deterrent against a possible Soviet first strike. To overwhelm our planned Minuteman defense would require a substantially larger number of Soviet warheads than if there were no defense, making Soviet attainment of a high-confidence, first-strike capability against Minuteman substantially more difficult and costly. However, should the Soviet threat to Minuteman become larger than Safeguard is designed to counter, then we would have to take further steps to protect our deterrent, and we are maintaining options to do so.

To prepare for such hard decisions should they have to be made, however, we are undertaking important research and development programs. They include, for example, measures to improve ABM defenses of Minuteman and such potential measures as rebasing Minuteman missiles in harder silos or on transporters or, for the longer term, adding offensive weapons such as the Undersea Long Range Missile System (ULMS).

### III. The Proposed FY-71 Program

As a result of these analyses, the Secretary of Defense recommended an orderly and prudent augmentation of Safeguard, which the Joint Chiefs of Staff supported, and which the President approved.

For FY-71, we are recommending:

-- Authorization to deploy one additional Safeguard site at Whiteman Air Force Base, Missouri, (in a Minuteman field). Completion of this site -- scheduled for 1975 -- would increase our Minuteman defense and also contribute to our area defense and to protection of our alert bomber force.

-- Advance purchases to make possible the deployment of additional Sprints (short range interceptors) at the original Phase I Minuteman defense sites, to further increase the defense of Minuteman as the threat grows.

-- Authorization to undertake advanced preparation work at five more sites (Northeast, Northwest, the National Capital Area, Warren Air Force Base in Wyoming (a Minuteman field), and Michigan, Ohio.



This work will include site survey and engineering, land acquisition, and purchase of some long lead time items, but it does not commit us to the ultimate deployment of radars and missiles. If later recommended and authorized for actual deployment, these sites would add protection to our deterrent by strengthening defense of Minuteman, contributing to area defense, protecting the national command authority, and defending the alert bomber force until it is safely airborne.

The proposed program maintains the President's options -- after further review and decisions -- to move, if necessary, toward a full 12-site Safeguard system or to curtail the deployment if developments or arms agreements permit.

Should it be required, the full 12-site deployment could be installed by the late 1970s.

This system would provide substantial protection for the U. S. population for a number of years against Communist Chinese or other third country attack, and defense adequate to permit most of our alert bomber force to take off even if subjected to surprise attack by submarine-launched missiles. Defense against an accidental launch from any source would also be provided by the 12-site deployment. In addition, as a prudent hedge against possible increased future threats to our deterrent, the proposed FY-71 program would allow increases in the Minuteman defense level as the three sites in the Minuteman fields become operational.

#### IV. Strategic Arms Limitation Considerations

We make this recommendation for the continued but carefully limited deployment of Safeguard defenses in the firm belief that it is entirely consistent with our commitment to discuss limitations on both offensive and defensive weapons in Strategic Arms Limitation Talks (SALT) with the Soviet Union.

An important part of our proposed program is its flexibility. The limited Phase II deployment does not preclude agreement on a wide range of ABM levels. It can be modified as required by changes in the threat which result from arms limitation agreements or unilateral actions of the Soviets or Chinese Communists. Many possible agreements with the Soviets could include some form of missile defense for purposes consistent with both countries' objectives in entering an agreement. In the meantime, it is essential that we continue this defensive program.



PUBLIC STATEMENTS

1. Deputy Secretary of Defense David Packard to the House Armed Services Committee, March 9, 1970
2. President Richard M. Nixon, "U. S. Foreign Policy for the 1970's," February 18, 1970
3. Secretary of Defense Melvin R. Laird, "Fiscal Year 1970 Defense Program and Budget," February 20, 1970
4. Secretary of Defense Melvin R. Laird to the Senate Armed Services Committee and Senate Appropriations Defense Subcommittee, February 24, 1970
5. Deputy Secretary of Defense David Packard to the Senate Armed Services Committee and Senate Appropriations Defense Subcommittee, February 24, 1970
6. Director of Defense Research and Engineering Dr. John S. Foster, Jr., to the Senate Armed Services Committee and Senate Appropriations Defense Subcommittee, February 24, 1970
7. Soviet Defense Minister Marshal A. Grechko, from an article in Pravda, February 23, 1970





STATEMENT OF  
DEPUTY SECRETARY OF DEFENSE DAVID PACKARD  
TO  
COMMITTEE ON ARMED SERVICES  
U.S. HOUSE OF REPRESENTATIVES  
March 9, 1970

Mr. Chairman, we welcome the opportunity to appear before you and your Committee again this year to discuss the SAFEGUARD program. I would like, with your permission, to begin by presenting a formal statement. As you can see, Mr. Chairman, it is rather detailed. In the interest of conserving time, I propose to read only selected portions, and I request your permission to insert the complete text into the record:

This testimony is somewhat different from that presented the Senate Armed Services Committee. We have updated it where applicable in the hope of presenting this Committee the best and most timely information possible.

The decision of the Administration to request continuation of an orderly, phased, SAFEGUARD program for ballistic missile defense -- going beyond the Congressionally-approved Phase I -- was based on:

- Careful consideration of the original objectives of Safeguard defense, and of the need to maintain the President's flexibility on future options either to curtail or expand the system.

- The continued Chinese progress in nuclear weapons and the evolving and increasing offensive Soviet threat.

- The options currently available, considering technical progress and budgetary factors.

- The current international situation.

- Our desire to continue emphasis on strategic defensive systems to assure the survivability of our deterrent rather than being forced immediately to deploy additional offensive weapons.

- Our intent to maintain the flexibility to adapt our program to any agreement which might result from successful arms limitation talks.

I. Safeguard Objectives and the Decision

President Nixon, on March 14, 1969, announced these following defense objectives for Safeguard:



-- "Protection of our land-based retaliatory forces against a direct attack by the Soviet Union."

-- "Defense of the American people against the kind of nuclear attack which Communist China is likely to be able to mount within the decade."

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He further elaborated that:

-- "We will provide for local defense of selected Minuteman missile sites and an area defense designed to protect our bomber bases and our command and control authorities."

-- "By approving this system, it is possible to reduce U.S. fatalities to a minimal level in the event of a Chinese nuclear attack in the 1970's, or in an accidental attack from any source."

Thus, rather than focusing on a single purpose, Safeguard has been and continues to be designed to achieve several objectives against a combination of Soviet and Chinese threats.

The President also stated that "this program will be reviewed annually from the point of view of (a) technical development, (b) the threat, and (c) the diplomatic context including any talks on arms limitation." He further stated that, "each phase of the deployment will be reviewed to insure that we are doing as much as necessary but no more than that required by the threat existing at that time."

In accordance with the President's commitment, the President's Foreign Intelligence Advisory Board completed its own review of the strategic threats we face. Information was developed on various alternative courses for consideration, and a thorough review of these alternatives has been completed by the Department of Defense, including the Joint Chiefs of Staff (JCS), by the President's Defense Program Review Committee, and by the National Security Council.

These reviews led to the President's decision that authorization for a further, carefully measured deployment should be requested in FY-71.

## II. Current Status of Safeguard

We are now proceeding with the initial Congressionally-approved increment (Phase I) of two site complexes to be located in Minuteman



fields near Grand Forks AFB, North Dakota, and Malmstrom AFB, Montana. The purposes of this Phase I deployment, as stated last year are to: (1) Preserve the President's future options by establishing a minimum base for expansion if the threat requires it; (2) work out the problems that inevitably arise in any new major weapon system; (3) provide a beginning of protection for the Minuteman force against the mid-70's threat.

It will be remembered that a "Full-Phase II" Option, as described last year, would consist of 12 sites. The full system would provide protection for the Continental United States against the Chinese ICBM threat and the threat of an accidental or unauthorized attack. It also would provide protection for our Strategic Air Command (SAC) bombers and the National Command Authority at Washington, D. C., and would add to the Phase I defense of Minuteman. The coverage provided by the Spartan missiles included in Phase I forms a part of the Phase II area defense against the Chinese and provides a start on the defense of our bombers.

The Research and Development portion of the Safeguard program is progressing satisfactorily. On Kwajalein Atoll in the Pacific, the prototype Missile Site Radar (MSR) began radiating power in September 1968 and has been under checkout since that time. It has met or bettered most of its design objectives and no serious deficiencies have been found. Beginning in March 1968, checkout of the MSR data processing system was initiated and successful operation of four data processing units in parallel has since been achieved. MSR software for the first part of the system test program has been completed and is being installed. Beginning in July 1969, tracking of local targets was accomplished with the initial software and, in December 1969, two ICBMs launched from Vandenberg AFB, California, were successfully tracked.

Also, at Kwajalein, the Spartan interceptor has satisfactorily completed the first phase of development testing. We have had 15 launches, of which 11 were completely successful, 2 partially successful, and 2 failures. The Spartan will now be integrated under MSR control in the system test program.

Our Sprint interceptor is being tested, also satisfactorily, at White Sands Missile Range, New Mexico. We have had 37 launches, of which 19 were completely successful, 8 partially successful, and 10 failures. Two of these failures occurred since September of 1969. These two failures, which occurred after a period of very high success, have been diagnosed and engineering corrections are being developed. The White Sands test will be concluded shortly, and the system tests for Sprint started at Kwajalein.

The Perimeter Acquisition Radar is under fabrication and the first installation will be made at Grand Forks (the first Safeguard operational site).



We have encountered no serious technical problems in this development, and we have confidence of meeting the presently scheduled Equipment Readiness Date for the first PAR site. Certain important components are now being tested and, by September 1970, about 95% of the PAR components are scheduled for release for production.

The task of integrating all the major components into a system lies ahead. Missile integration tests will begin early this year at Kwajalein first with the Spartan and then with the Sprint under control of the MSR. Actual intercepts (without live warheads) will be conducted later against ICBM targets fired from Vandenberg AFB, California, and against Polaris targets fired from a Navy ship.

We have defined command and control requirements for the interface with the Air Force Minuteman equipment, and completed a study of the integration of Safeguard with the Continental Air Defense Command. No problems have been encountered.

Engineering design for the Grand Forks site has been substantially completed and contract award is expected to be made about 1 April. There has been a delay in the Equipment Readiness Date (ERD) of the Phase I sites of 8 to 10 months. This delay is due in part to delay in initiating on-site activities while awaiting Congressional action on Phase I (3 months slip) and in part deliberate, to allow a more economical and less compressed construction schedule (5 to 7 months). Procurement of long lead-time production items for Phase I sites is underway.

### III. Threat Changes in the Last Year

In this year's Safeguard review, the developments in the threat that have occurred in the last year since the Administration decided to undertake Phase I have been carefully evaluated. The following discussion summarizes what has happened since February 1969 in this area:

1. Communist China has continued to test nuclear devices which are expected to be suitable for ICBM application by the time their missile has been developed. There is new evidence that they continue to advance toward an ICBM capability, but the earliest date by which they could achieve an initial ICBM capability now seems to be in the early part of 1973. This represents about a one-year slippage in last year's estimated earliest capability. It is more likely, however, that their initial capability will be attained by the mid-1970's. If the initial Chinese ICBM capability were achieved by early 1973, they might



have between 10 and 25 operational launchers by 1975. But, in the more likely event that their initial capability comes later, the achievement of a force of this size would slip accordingly.

It is important to note that even if the Chinese deployment does not attain a capability until 1976, our Safeguard area coverage (if authorized) will still not be fully complete by that time.

2. The Soviet buildup of SS-9s deployed or believed to be under construction has now reached 275, as compared to about 230 last Spring. Development and testing of the 3-reentry vehicle SS-9 configuration continues. These tests have demonstrated to us the flexibility necessary to target each warhead against a Minuteman silo, but it is agreed within our intelligence community that the Soviets are likely to develop Multiple Independent Reentry Vehicles (MIRV) in the next few years.

3. The number of SS-11s operational or under construction, estimated at about 700 last Spring, is now more than 800. Since last Spring, Soviet testing of their smaller SS-11 ICBM suggests that certain improvements probably aimed at bettering their penetration capability are under development. If the Soviets go on to develop a more accurate SS-11 reentry vehicle and an improved guidance system as is possible by the mid-1970's, the SS-11 could become effective against our Minuteman silos as well as against the Safeguard radars.

4. Production of nuclear-powered ballistic-missile submarines is continuing at two Soviet shipyards which together can produce six to eight boats a year. Several of these Polaris-type vessels, each with 16 missiles are now believed to be operational.

#### IV. Review of Current Options

In our Safeguard review, we considered several alternatives. One was to cancel the Phase I deployment. This would have been adopted only if we had become convinced that (1) the system would not work properly, or (2) the completed system would be inadequate to meet the President's objectives, or (3) the threats had not developed, either because of arms limitation talks or for other reasons. Since none of these conditions prevailed, this option was rejected.

A second alternative, continuation of Phase I only with additional research and development, would have enabled us to proceed toward one desirable objective--the operational check-out of the system. However, in view of the continued growth of the Soviet threat and the prospects of Chinese deployment of an ICBM force in the mid-1970s, we could not justify a year's delay in taking measures to protect ourselves against these threats.

We also considered but did not recommend the deployment of additional forms of ballistic missile defense, such as a dual-purpose Minuteman system, mobile systems, or forward-based systems. These systems do not achieve the multiple objectives of Safeguard.



During this review, we also examined the effectiveness of the full Safeguard system in protecting against the Chinese threat and in defending Minuteman.

Some argue that Safeguard will not give effective protection against China for long enough to justify its costs. Although the Communist Chinese may have a limited ICBM force (10 to 25 operational launchers) as early as 1975, growth of their ICBM force in numbers of sophistication is expected to be very slow because of economic and technical manpower limitations. Safeguard Phase II is expected to have a capability more than adequate to cope with the Chinese threat in the late 1970s.

Another possibility is that the Chinese might develop and deploy penetration aids. Relatively simple devices like tank fragments have a limited ability to deceive a sophisticated defense system like Safeguard. Even to achieve that crude capability, the Chinese would have to construct an extensive radar and instrumentation capability simply to be assured that in-flight fragmentation of the tank could be properly carried out. Moreover, without very detailed knowledge of the operating characteristics of Safeguard, it is not possible to design a penetration system in which they can have confidence. More complex penetration aids require much more complex range instrumentation together with the efforts of hundreds of highly skilled technical people. We spent about a decade developing effective penetration aids for our own missiles. It is believed that the Chinese have no such range instrumentation and they may not be able to build it for many years. Thus penetration aids, even the simplest kinds, require technical effort, including testing, which will complicate and delay what might, in the absence of a U. S. ABM defense, be the relatively rapid acquisition of attack capabilities.

If we look beyond these obstacles to Communist Chinese weapons development toward a later time when they could develop more sophisticated reentry systems for their ICBMs, we would still have ways of maintaining our capability to defend against them. We have a vigorous ABM research and development effort (outside the Safeguard program) which is today working on ways of extending the useful life of Safeguard against a more sophisticated Communist Chinese threat. Those measures would not involve a general thickening of the system in ways which might appear provocative to the Soviet Union.

Criticisms have also been raised about the suitability and effectiveness of Safeguard for the defense of Minuteman against a possible Soviet first strike.

Last year some critics of Safeguard asserted that a serious threat to Minuteman survivability did not exist and that Minuteman did not need



defending. Developments in Soviet strategic forces over the last year have confirmed our original judgments that the threat is real and serious.

Others, in contrast, have asserted that if the Soviets wanted a first strike capability they could easily overcome the Safeguard defense. The Safeguard defense was designed in the belief that the Soviet offensive threat we now project -- in the absence of an arms agreement or Soviet restraint, of which there is as yet no sign -- could destroy our Minuteman deterrent unless it were defended.

Any fixed level of defense can eventually be overwhelmed if an attacker is willing to add enough warheads to "run it out of ammunition." We know, however, that to overwhelm our planned Minuteman defense the Soviets would require a substantially larger number of warheads than if there were no defense, making Soviet attainment of a high confidence first strike capability against Minuteman substantially more difficult and costly.

As a prudent, measured deployment, Safeguard Phase II was not designed to cope with the most ambitious and costly efforts that we can imagine would be within the industrial and technical capacity of the U. S. S. R. Should the Soviet threat to Minuteman become larger than Safeguard is designed to counter, then we would have to make further decisions to protect our deterrent.

If we do have to take further steps, we have options available. For example, we have under consideration a new, smaller, less expensive radar and data processor aimed specifically at close-in defense of Minuteman. Deployment of this equipment with additional Sprint interceptors is a possibility. Also, we are actively working on ways of rebasing Minuteman missiles in harder silos or on transporters. Further, we shall continue to study additional forms of ballistic missile defense, such as those previously mentioned.

A longer range program for enhancing the survival of our deterrent is the Undersea Launched Long Range Missile System (ULMS), for which we now have an active research and development program.

As a result of these analyses, the Secretary of Defense recommended an orderly and prudent augmentation of Safeguard, which the JCS supported.

## V. The Propsed FY-71 Program: Modified Phase II

### 1. Description

For FY-71, we are recommending authorization to deploy one additional Safeguard site at Whiteman Air Force Base, Missouri (in the



Minuteman field). We recommend, too, that the program include the deployment of additional Sprints at Grand Forks and Malmstrom, thus further increasing the total number of interceptors capable of defending Minuteman. This will require additional acquisition of small parcels of land and additional silo construction at Grand Forks and Malmstrom. With regard to the additional Sprint missiles themselves, since the purchase of only the long lead-time missile components is required in FY-71, the decision to produce and deploy them can be reviewed later.

Also, we recommend for FY-71 authorization to undertake the long lead-time task of advanced preparation work for five more sites. This task includes site survey and engineering, land acquisition and purchase of some long lead-time items, but does not commit us to the deployment of radars or missiles. The five sites are Northeast, Northwest, the National Capital Area, Warren Air Force Base in Wyoming, and Michigan/Ohio.

The proposed program maintains the President's options to move further toward a 12-site Full Phase II Safeguard system, if necessary, or to curtail the deployment if threat developments permit. This deployment continues orderly, controlled, progress toward the objectives set forth by President Nixon and yet does not commit us to Full Phase II deployment without further review and further decisions. The deployment can be modified as required by changes in the threat, arms limitation negotiations or unilateral actions of the Soviets or Chinese Communists.

Should it be required, the Full 12-site deployment could be installed by the late 1970s if there were FY-72 authorization for the remaining 9 sites, including the 5 sites for which only advanced preparation authority is being requested in FY-71.

The 12-site deployment would provide substantial area defense of the United States population for a number of years against Communist Chinese or other Nth country attack.

I think it is especially important to note that this area defense would help protect our Strategic Air Command bombers against the SLBM threat methodically developing from Soviet Polaris-type submarine production. The National Command Authority at Washington, D. C., may also need area-defense protection from SLBMs. The advanced preparation work we think vitally necessary at five sites in FY-71 is a minimum beginning-option on this important area defense.

As a prudent hedge against possible future needs, this proposed program would increase the Minuteman defense level as the three sites in the



Minuteman fields become operational. The first two sites, which constitute Phase I, will be installed by early 1975. The third site, Whiteman AFB, Missouri, would be installed in 1975 if approved in FY-71. Also, we would increase the number of Sprints at the first two sites for further protection of Minuteman.

The choice of the particular sites for which full or advance preparation authorization is requested in FY-71 is based on the following reasoning: The site for which deployment authorization is requested, Whiteman, contributes to all three Presidential objectives. Advanced preparation authority is requested for the National Capital Area site because of the importance of protecting the National Command Authority; for Warren AFB, because it would complete the four-site Safeguard defense of Minuteman, as well as contributing to area defense; and for Northwest US, Northeast US and Michigan/Ohio, to complete the PAR line along the northern border for area defense of the most heavily populated areas and to provide a start on two sites with seaward-looking PAR faces needed to detect SLBMs (Northwest and Northeast sites).

## 2. Deployment Schedule

The deployment schedule for the three sites that would be completed under this program is shown below. The schedule shows equipment readiness dates on which equipment would be installed and operable and the site turned over to military control. Following these dates, there would be a period of about six months of continuing checkout, training and acceptance testing during which there will be a limited operational capability.

### Equipment Readiness Dates

<u>Late '74</u>	<u>Early '75</u>	<u>1975</u>
Grand Forks	Malmstrom	Whiteman

## 3. DOD Costs

The DOD FY-71 budget submission includes a request for \$1.45 billion for Safeguard. This amount is requested for FY-71 to continue Phase I deployment, to commence deployment at the one additional site, and to undertake advanced preparations at the five potential future sites. Actual expenditures in FY-71 for the Phase II program will be substantially less than \$100 million.

The total DOD acquisition costs (which include military construction, purchase of radars and missiles, the cost of research, development, test and



evaluation, but do not include operating costs) for the Phase I sites and new Phase II site at Whiteman--in other words for completing Modified Phase II--are estimated to be \$1.38 billion for FY-71 and \$5.9 billion total. The \$5.9 billion acquisition cost, which would be expended over the period of Fiscal Years 1968-1975, includes development through system testing of the Improved Spartan. These figures compare with approximately \$1.05 billion that would be required in FY-71 if the program were restricted to Phase I only, and a total DOD acquisition cost of \$4.5 billion for Phase I only.

(The FY-71 requirements for additional research and development on improved radar, on data processing and on Sprints for possible hardsite defense are included in the \$158 million Advanced Ballistic Missile Defense budget -- not part of the Safeguard Program -- because no decision has yet been made to deploy these new components.)

Proceeding now to begin Phase II deployment maintains the option -- as mentioned earlier -- to complete expeditiously the Full Phase II should this be required later. For example, if the remaining 9 sites (including the 5 sites for which only advanced preparation authority is being requested in FY-71) were authorized in FY-72, then all 12 sites could be installed by the late 1970s.

In this case, the total DOD acquisition cost would be \$10.7 billion (December 1969 price levels). This compares with a figure of \$9.1 billion (December 1968 price levels) reported to the Congress last year. The increase of \$1.6 billion is due to several causes. One is inflation in price levels that occurred between December 1968 and December 1969. Another increase is caused by the stretch-out in the time until deployment can be completed. Stretch-out increases program costs because it causes the retention of trained personnel and continuation of support activities over a longer period of time. Finally, increases resulted from certain changes found necessary during the year (for example, additional interceptors were added in Phase II for operational testing), and more detailed estimates for the work earlier contemplated. Of the total increase, \$395 million, or 4 percent of the previously reported estimate, is due to inflation; \$575 million, or 6 percent, is due to the stretch-out of deployment; and \$650 million, or 7 percent, is due to design changes and more detailed estimates.

The above stated costs are exclusive of operating costs, which, for the period after the completion of deployment, are estimated to be about \$100 million annually for a two-site deployment and \$350 million annually for the Full Phase II.



Finally, Safeguard costs do not include Atomic Energy Commission costs related to ABM which would total \$1.2 billion for the Full Phase II deployment (exclusive of the costs for warheads for the Improved Spartan whose costs cannot yet be estimated firmly).

These estimates do not include certain indirect costs that are budgeted elsewhere. Examples of those indirect costs are range support and family housing.

It will be noted that acquisition costs and operating costs do not increase in proportion to the number of sites deployed. This is because there is an "overhead" level of personnel and services necessary to plan, supervise and support the deployment regardless of the number of sites. Also, costs vary from site to site depending on the number of radars and missiles.

I want to tell this Committee very frankly that if such factors as inflation, stretch-out and design improvements occur in future years as they did in the past year then we could experience some continuing cost growth of this defense. I am confident the Safeguard Program is well managed, and I will regularly advise Congress of its progress and of my best cost estimates for it, conducting the program on the most economical basis consistent with national security, and consistent with the President's decision that we do only the minimum necessary when it is necessary.

## VI. Strategic Arms Limitation Considerations

We make this recommendation for the continued but carefully limited deployment of Safeguard defenses in the firm belief that it is entirely consistent with our commitment to discuss limitations on both offensive and defensive weapons in Strategic Arms Limitation Talks (SALT) with the Soviet Union.

An important part of our proposed program is its flexibility. The Modified Phase II deployment does not preclude agreement on a wide range of ABM levels. It can be modified as required by changes in the threat which results from arms limitation agreements or unilateral actions of the Soviets or Chinese Communists. Many possible agreements with the Soviets could include some form of missile defense for purposes consistent with both countries' objectives in entering an agreement. In the meantime, it is essential that we continue this defensive program in the interests of our security.



Mr. Chairman, I think it is important to note that the Soviets have not halted or slowed since the beginning of SALT their development and testing of strategic offensive and strategic defensive missile systems.

Since the beginning of SALT they have tested strategic missiles at a rate approximately twice that of United States testing.

They also have continued their ABM tests--including tests of an improved long-range ABM--and as Secretary Laird has said they have conducted successful intercept tests. They also are expanding their radar surveillance coverage.

We have no evidence that the Soviets have either completed or intend to curtail this vigorous testing program.

Now, Mr. Chairman, I know some have raised questions of why it is essential to go forward with additional Safeguard defense now. I would answer the "why now" questions in this manner:

First, Modified Phase II of the Safeguard defense enhances the prospects of meaningful negotiation and of success at SALT by permitting us to postpone hard decisions on additional offensive weapon systems actions this year.

Second, it permits this restraint while still providing a prudent hedge against moderate threats; and at the same time, it preserves an option to meet, if necessary, a heavier threat.

Third, it enables us to purchase this needed insurance in FY-71 at a very minimum expenditure--substantially less than \$100 million.

Fourth, it is a clear evidence that the United States intends to make the Nixon Doctrine foreign policy work by providing adequate defenses to prevent other nations from engaging in diplomacy by nuclear blackmail against us in coming years.

In other words, Mr. Chairman, the evident and continuing threats from the Soviet Union and Communist China force upon us the necessity of continuing progress on the Safeguard anti-ballistic missile defense system in FY-71.

We hope SALT will lead to a reduced Soviet threat but, meanwhile, it is essential to preserve, as far as is possible, all available strategic force options in this transitional budget year. As I indicated earlier, without the Safeguard increment provided by this budget, we would be faced now with the hard decisions about adding immediately to our offensive systems rather than being able to await hoped-for progress in SALT.

Our decision now to proceed with further deployment of Safeguard gives us another year in which to pursue SALT without ourselves exacerbating the arms control environment through actions on offensive systems.

An important part of our proposed program is its flexibility. It can be modified as required by changes in the threat which result from arms limitation agreements or unilateral actions by the Soviets or Chinese Communists. In the meantime, it is essential that we continue this defensive program.

Mr. Chairman, this completes my formal statement. We will be pleased to answer any questions you or the Committee may have at this time.





The following is from "U.S. Foreign Policy for the 1970's, A New Strategy for Peace," a report to the Congress by President Nixon on February 18, 1970.

## STRATEGIC POLICY

### The Changing Strategic Balance

Following World War II, the U.S. had a monopoly of strategic nuclear weapons. Throughout most of the 1950's, our virtual monopoly of intercontinental nuclear delivery capability, in the form of a large force of Strategic Air Command bombers, gave us an overwhelming deterrent.

This assessment was unchallenged until it became apparent in the late 1950's that the Soviet Union possessed the potential for developing and deploying a force of intercontinental ballistic missiles that could destroy a large part of our strategic bomber force on the ground. The fear that our deterrent to nuclear war was in grave jeopardy, though it later proved exaggerated, focused our attention on maintaining our nuclear superiority.

In 1961, the new Administration accelerated our Polaris submarine and Minuteman ICBM programs and put more of our strategic bombers on alert. These measures provided a clear margin of U.S. nuclear superiority for several years. They restored our confidence in our deterrent; we now had two forces, our Polaris submarines and our Minuteman ICBM's, deployed in hardened underground silos, that were virtually invulnerable to attack by the Soviet Union with the then-existing technology.

However, after 1965, the Soviets stepped up their ICBM deployments and began to construct their own force of Polaris-type submarines. And they began to test multiple warheads for their SS-9 ICBM, a weapon which can carry roughly ten times as much as our Minuteman missile.

Once again, U.S. strategic superiority was being challenged. However, this time, the Johnson Administration decided not to step up deployments. This restraint was based on two judgments. First, it was believed that there was relatively little we could do to keep the Soviets from developing over a period of time a strategic posture comparable in capability to our own. Second, it was thought that nuclear superiority of the kind we had previously enjoyed would have little military



or political significance because our retaliatory capability was not seriously jeopardized by larger Soviet forces and because their goal was in all likelihood a retaliatory capability similar to ours.

As a result of these developments, an inescapable reality of the 1970's is the Soviet Union's possession of powerful and sophisticated strategic forces approaching, and in some categories, exceeding ours in numbers and capability.

Recent Soviet programs have emphasized both quantitative increases in offensive and defensive forces and qualitative improvements in the capabilities of these forces--such as a new, more accurate warhead and perhaps penetration aids for their Minuteman-type SS-11 missile, continued testing of the multiple warhead for the SS-9, and research and development on improved components for their ABM system, together with improved coverage by their ABM radars. The following table shows the growth in Soviet land-and submarine-based missile forces in the last five years.

#### OPERATIONAL U.S. AND SOVIET MISSILES

	1965 (Mid-Year)	1970 (Projected) (For Year End)
<u>Intercontinental Ballistic Missiles</u>		
U.S.	934	1,054
Soviet	224	1,290
<u>Submarine Launched Ballistic Missiles</u>		
U.S.	464	656
Soviet	107	300

The Soviet missile deployments are continuing, whereas ours have leveled off. In the 1970's we must also expect to see Communist China deploy intercontinental ballistic missiles, seriously complicating strategic planning and diplomacy.



The evolution of U.S. and Soviet strategic capabilities during the past two decades was accompanied by intense doctrinal debates over the political and military roles of strategic forces and the appropriate criteria for choosing them.

The strategic doctrine that had gained the greatest acceptance by the time my Administration took office was this: According to the theory of "assured destruction," deterrence was guaranteed if we were sure we could destroy a significant percentage of Soviet population and industry after the worst conceivable Soviet attack on our strategic forces. The previous Administration reasoned that since we had more than enough forces for this purpose, restraint in the build-up of strategic weapons was indicated regardless of Soviet actions. Further, it hoped that U.S. restraint in strategic weapons developments and deployments would provide a strong incentive for similar restraint by the Soviet Union, thus enhancing the likelihood of a stable strategic relationship between the two nuclear superpowers.

#### A Policy for the 1970's

Once in office, I concluded that this strategic doctrine should be carefully reviewed in the light of the continued growth of Soviet strategic capabilities. Since the Soviets were continuing their ambitious strategic weapons program, we had to ask some basic questions. Why might a nuclear war start or be threatened? In this light, what U.S. strategic capabilities are needed for deterrence?

We sought, in short, a strategic goal that can best be termed "sufficiency."

Our review took full account of two factors that have not existed in the past.

First, the Soviets' present build-up of strategic forces, together with what we know about their development and test programs, raises serious questions about where they are headed and the potential threats we and our allies face. These questions must be faced soberly and realistically.



Second, the growing strategic forces on both sides pose new and disturbing problems. Should a President, in the event of a nuclear attack, be left with the single option of ordering the mass destruction of enemy civilians, in the face of the certainty that it would be followed by the mass slaughter of Americans? Should the concept of assured destruction be narrowly defined and should it be the only measure of our ability to deter the variety of threats we may face?

Our review produced general agreement that the overriding purpose of our strategic posture is political and defensive: to deny other countries the ability to impose their will on the United States and its allies under the weight of strategic military superiority. We must insure that all potential aggressors see unacceptable risks in contemplating a nuclear attack, or nuclear blackmail, or acts which could escalate to strategic nuclear war, such as a Soviet conventional attack on Europe.

Beyond this general statement, our primary task was to decide on the yardsticks that should be used in evaluating the adequacy of our strategic forces against the projected threats. This issue took on added importance because such yardsticks would be needed for assessing the desirability of possible strategic arms limitation agreements with the Soviet Union.

We reached general agreement within the government on four specific criteria for strategic sufficiency. These represent a significant intellectual advance. They provide for both adequacy and flexibility. They will be constantly reviewed in the light of a changing technology.

### Designing Strategic Forces

Having settled on a statement of strategic purposes and criteria, we analyzed possible U.S. strategic force postures for the 1970's and beyond. We reviewed alternatives ranging from "minimum deterrence"--a posture built around ballistic missile submarines and the assured destruction doctrine narrowly interpreted--to attempts at recapturing numerical superiority through accelerated U.S. strategic deployments across the board.

There was general agreement that postures which significantly reduced or increased our strategic programs and deployments involved undesirable risks:



-- Sharp cutbacks would not permit us to satisfy our sufficiency criteria, and might provoke the opposite Soviet reaction. If the U.S. unilaterally dropped out of the strategic arms competition, the Soviets might well seize the opportunity to step up their programs and achieve a significant margin of strategic superiority. The vigor and breadth of their current strategic weapons programs and deployments which clearly exceed the requirements of minimum deterrence, make such a possibility seem far from remote. They might also--paradoxically--eliminate any Soviet incentives for an agreement to limit strategic arms, and would raise serious concerns among our allies. This is particularly true for our NATO allies who view the U.S. commitment to deter Soviet aggression as being based mainly on our maintenance of a powerful strategic posture.

-- Sharp increases, on the other hand, might not have any significant political or military benefits. Many believe that the Soviets would seek to offset our actions, at least in part, and that Soviet political positions would harden, tensions would increase, and the prospect for reaching agreements to limit strategic arms might be irreparably damaged.

What ultimately we must do in between these extremes will depend, of course, on many factors. Will the Soviets continue to expand their strategic forces? What will be their configuration? What understanding might we reach on strategic arms limitations? What weapons systems might be covered by agreements?

I recognize that decisions on shaping our strategic posture are perhaps the most complex and fateful we face. The answers to these questions will largely determine whether we will be forced into increased deployments to offset the Soviet threat to the sufficiency of our deterrent, or whether we and the Soviet Union can together move from an era of confrontation to one of negotiation, whether jointly we can pursue responsible, non-provocative strategic arms policies based on sufficiency as a mutually shared goal or whether there will be another round of the arms race.



## The Role of Ballistic Missile Defense

My decision to continue with the construction of the Safeguard anti-ballistic missile system is fully consistent with our criteria and with our goal of effective arms limitation.

I would like to recall what I said last March about the problem that led us to seek approval of the first phase of the Safeguard program:

"The gravest responsibility which I bear as President of the United States is for the security of the Nation. Our nuclear forces defend not only ourselves but our allies as well. The imperative that our nuclear deterrent remain secure beyond any possible doubt requires that the U.S. must take steps now to insure that our strategic retaliatory forces will not become vulnerable to a Soviet attack."

I believed then, and I am even more convinced today, that there is a serious threat to our retaliatory capability in the form of the growing Soviet forces of ICBM's and ballistic missile submarines, their multiple warhead program for the SS-9 missile, their apparent interest in improving the accuracy of their ICBM warheads, and their development of a semi-orbital nuclear weapon system. That this threat continues to be serious was confirmed by my Foreign Intelligence Advisory Board--an independent, bipartisan group of senior outside advisors--which recently completed its own review of the strategic threats we face.

I pointed out in the same statement that we cannot ignore the potential Chinese threat against the U. S. population, as well as the danger of an accidental or unauthorized attack from any source. Nor can we dismiss the possibility that other countries may in the future acquire the capability to attack the U. S. with nuclear weapons. Today, any nuclear attack -- no matter how small; whether accidental, unauthorized or by design; by a superpower or by a country with only a primitive nuclear delivery capability -- would be a catastrophe for the U. S., no matter how devastating our ability to retaliate.

No Administration with the responsibility for the lives and security of the American people could fail to provide every possible protection against such eventualities.



Thus on March 14, 1969, I stated the objectives of the Safeguard program:

"This measured deployment is designed to fulfill three objectives:

"1. Protection of our land-based retaliatory forces against a direct attack by the Soviet Union.

"2. Defense of the American people against the kind of nuclear attack which Communist China is likely to be able to mount within the decade.

"3. Protection against the possibility of accidental attacks."

I further described the system as follows:

"We will provide for local defense of selected Minuteman missile sites and an area defense designed to protect our bomber bases and our command and control authorities. In addition, this system will provide a defense of the Continental United States against an accidental attack and will provide substantial protection against the kind of attack which the Chinese Communists may be capable of launching throughout the 1970's. This deployment will not require us to place missile and radar sites close to our major cities."

Last year, I promised that "each phase of the deployment will be reviewed to insure that we are doing as much as necessary but not more than that required by the threat existing at that time." I further indicated that in strategic arms limitation talks with the Soviet Union, the United States will be fully prepared to discuss limitations on defensive as well as offensive weapons systems.

The further steps I shall propose will be consistent with these pledges. The Secretary of Defense will put forward a minimum program essential for our security. It fully protects our flexibility in discussing limitations on defense weapons with the Soviet Union. It is my duty as President to make certain that we do no less.





#### D. SAFEGUARD

The evident and continuing threats from the Soviet Union and Communist China force upon us the necessity of continuing progress on the SAFEGUARD anti-ballistic missile defense system in FY 1971. We hope SALT will lead to a reduced Soviet threat but, meanwhile, it is essential to preserve, as far as possible, all available strategic force options in this transitional budget year. As I indicated earlier, without the SAFEGUARD increment provided by this budget, we would be faced now with the hard decisions about adding immediately to our offensive systems rather than being able to await hoped-for progress in SALT. I will be discussing with you in more detail the elements of the President's decision to go forward with a Modified Phase II of the defensive SAFEGUARD program at our next meeting. At this point, permit me to summarize the essential factors that compel us to go forward with a second increment of SAFEGUARD in FY 1971.

The decision of the Administration to request continuation of an orderly, phased, SAFEGUARD program for ballistic missile defense -- going beyond the Congressionally-approved Phase I -- was based on:

- Careful consideration of the original objectives of SAFEGUARD defense, and of the need to maintain the President's flexibility on future options to either curtail or expand the system.
- The continued Chinese progress in nuclear weapons.
- The evolving and increasing Soviet offensive weapon threat.
- Our determination to strengthen possibilities for a successful Strategic Arms Limitation agreement.
- The options currently available, considering technical progress and budgetary factors.
- The current international situation.
- Our desire to continue emphasis on strategic defensive systems rather than being forced to deploy additional offensive weapons or to be forced to move forward now, with making a portion of our MINUTEMAN force mobile.

#### 1. SAFEGUARD Objectives and the Decision

President Nixon, on March 14, 1969, announced the following defense objectives for SAFEGUARD.



- "Protection of our land-based retaliatory forces against a direct attack by the Soviet Union.
- "Defense of the American people against the kind of nuclear attack which Communist China is likely to be able to mount within the decade.
- "Protection against the possibility of accidental attacks from any source."

He further elaborated that:

- "We will provide for local defense of selected MINUTEMAN missile sites and an area defense designed to protect our bomber bases and our command and control authorities.
- "By approving this system, it is possible to reduce U.S. fatalities to a minimum level in the event of a Chinese nuclear attack in the 1970's, or in an accidental attack from any source."

As the President has indicated, rather than focusing on a single purpose, SAFEGUARD has been and continues to be designed to achieve several objectives against a combination of Soviet and Chinese threats.

The President also stated that "this program will be reviewed annually from the point of view of (a) technical developments, (b) the threat, and (c) the diplomatic context including any talks on arms limitation." And, as he reminded the nation in his report on foreign policy, we also promised last year that "each phase of the deployment will be reviewed to ensure that we are doing as much as necessary but not more than that required by the threat existing at that time."

In accordance with this commitment, information was developed on various alternative courses for consideration, and a thorough review has been accomplished by the Department of Defense, including the Joint Chiefs of Staff (JCS), by the National Security Council, and the Defense Program Review Committee (DPRC). These reviews led to the President's decision that a further but carefully measured and modified defensive deployment should be requested in FY 1971.

## 2. Communist Chinese Threat

Communist China has continued to test nuclear weapons suitable for missiles. Estimates of the date by which they might have an initial ICBM capability vary from 1973 to the mid-1970's. In either case, we must proceed with the area coverage of SAFEGUARD if we are to protect our population from this threat in the late 1970's.



As a further point, however, regarding the Chinese threat, the President made it clear that we are concerned with the very likely prospect of the Chinese gaining an operational capability within the next ten years. Our past history has shown that where we have avoided important decisions and there is a dramatic revelation of adversary progress affecting our security, the American people and the Congress rightfully have become aroused and have demanded immediate and forceful but expensive responses on a crash basis. SPUTNIK was a good example.

We know that the Chinese have the capability of testing an ICBM in the immediate future and that they are likely to have an operational capability in the next several years. A measured and orderly deployment of SAFEGUARD, taking only the minimum steps necessary to preserve our ability to meet the threat as it evolves, is both the most prudent and most economical course we can pursue.

### 3. Soviet Threat to our MINUTEMAN Deterrent Force

As described earlier, it is apparent that the growth of Soviet forces could present a severe threat to the survival of the MINUTEMAN and bomber forces by the mid-70s. We are now faced with the following possibilities concerning MINUTEMAN:

- a) That the Soviets do not increase the deployment of the SS-9 and the SS-11, do not develop a MIRV for the SS-9, and do not improve ICBM accuracy. Under these circumstances there is no need for a defense of the MINUTEMAN force.
- b) That the Soviets stop building ICBMs beyond those now operational or started; they do not develop a MIRV for the SS-9; but they do improve the accuracy of their entire ICBM force. Under these circumstances, the force could constitute a threat to the MINUTEMAN force and SAFEGUARD would be quite effective against that threat.
- c) That the Soviets deploy a MIRV on the SS-9, improve their ICBM accuracy, and do not stop building ICBMs at this time, but continue building them at their present rate. We would then be faced in the mid-70s with a threat which is much too large to be handled by the level of defense envisioned in the SAFEGUARD system without substantial improvement and modification.

The above factors presented us with a most difficult decision involving three basic choices:

- 1) Should we react to the threats which are possible for the mid-70s and pay, beginning immediately, the cost of this concern?



- 2) Should we hope that the threat is only modest and stay with the present SAFEGUARD deployment?
- 3) Should we assume there will be no serious threat and do nothing?

To be perfectly candid, Mr. Chairman, it must be recognized that the threat could actually turn out to be considerably larger than the SAFEGUARD defense is designed to handle. That is one reason we have decided to pursue several courses which should lead to less expensive options for the solution to this problem than expanding SAFEGUARD to meet the highest threat level. We have further decided to continue deployment of SAFEGUARD because the additional cost needed to defend a portion of MINUTEMAN is small if the full area defense is bought. SAFEGUARD can also serve as a core for growth options in defense of MINUTEMAN, if required.

If, in the future, the defense of MINUTEMAN has to be expanded, new and smaller additional radars placed in MINUTEMAN fields would be less costly than the SAFEGUARD Missile Site Radar (MSR) because they would not have to cover such large areas. For this reason, we will pursue a program to determine the optimum radar for such a defense and begin the development of this radar and associated components in FY 1971. At the same time, the Air Force will pursue several other options for solving the survivability problem of the land-based missile systems. These will include several concepts involving the MINUTEMAN missile on transporters, in one case a system in which the missile can be moved rapidly into one of many hard shelters -- the shelter-based MINUTEMAN. The Air Force will also continue to examine the value of increasing the hardness of the silos in which MINUTEMAN is now based or could be based. These are all research and development programs only, in the FY 1971 budget.

There are, then, several options. The SAFEGUARD defense will serve as a nucleus. We can add a hardpoint defense system if necessary or we may later choose to base part of the force in a different basing concept than the present force. Proceeding with further deployment of SAFEGUARD in FY 1971 postpones the necessity of committing ourselves now either to a mobile MINUTEMAN (on land or afloat) or to further hardening of MINUTEMAN silos. However, should the Soviet threat continue to grow beyond levels that can be reasonably handled by active defense, I can assure this Committee that I will not hesitate at any time to recommend accelerated development of ULMS should the nature of the threat warrant it in the future. As you know, Mr. Chairman, it was my amendment to the Defense Appropriation Bill in the late 1950s that accelerated the development and deployment of POLARIS.



In summary, our decision now to proceed with further deployment of SAFEGUARD gives us another year in which to pursue SALT without ourselves exacerbating the arms control environment through actions on offensive systems. We can do this while still providing a hedge against moderate threats and an option to meet, if necessary, a heavier threat.

Also, the production of Soviet nuclear-powered ballistic missile submarines is continuing at two shipyards. By the mid-1970s the Soviets will probably have a submarine force capable of destroying most of our alert bomber and tanker force before it can fly to safety. This same submarine force threatens our National Command Authorities. We need the SAFEGUARD area defense to blunt the first few minutes of such an attack so that our bombers can escape and our command system can execute its prime function. Otherwise, we must turn to expensive alternatives such as rebasing or continuous airborne alert.

#### 4. Strategic Arms Limitations Considerations

Naturally, the recommendation we are making for the continued but carefully limited deployment of SAFEGUARD defenses is in full recognition that Strategic Arms Limitation Talks with the Soviets will resume in April for the discussion of many complex issues. Among the factors that have led us to recommend this measured and modified continuation are both the continued growth of the Soviet strategic threat to the United States, and the fact that many possible agreements with the Soviet Union could include some form of missile defense -- which would be consistent with our national security objectives and the legitimate security interests of the Soviet Union. The decision to begin a modified Phase 2 deployment does not preclude an agreement on low ARM levels.

In addition, it must be borne in mind that the Soviets have no control over the Communist Chinese, whose threat we must therefore cope with regardless of SALT. As President Nixon recently stated: "Ten years from now, the Communist Chinese, among others, may have a significant nuclear capability . . . then it will be very important for the United States to have some kind of defense so that nuclear blackmail could not be used."

An orderly, measured, flexible but ongoing SAFEGUARD defense program will help maintain our relative positive position in SALT and improve the chances for a successful outcome.

An important part of our proposed program is its flexibility. It can be modified as required by changes in the threat which result from arms limitation agreements or unilateral actions by the Soviets or Chinese Communists. In the meantime, it is essential that we continue this defensive program.



It is important to remember that the purpose of the investigation is to determine whether the evidence is sufficient to establish the guilt of the accused. The evidence must be evaluated in light of the facts and circumstances of the case. It is not sufficient to simply state that the evidence is sufficient; it must be explained why it is sufficient.

The evidence in this case is sufficient to establish the guilt of the accused. The evidence is based on the testimony of the witnesses, the physical evidence, and the circumstantial evidence. The evidence is consistent and corroborated. The evidence is sufficient to establish the guilt of the accused beyond a reasonable doubt.

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STATEMENT OF SECRETARY OF DEFENSE MELVIN R. LAIRD

ON

FY 71 MODIFIED PHASE II SAFEGUARD PROGRAM

24 FEBRUARY 1970

In my initial appearance before the Senate Armed Services Committee and the Defense Subcommittee of the Senate Appropriations Committee last Friday, I reported to you that President Nixon's decision to move forward with a Modified Phase II of Safeguard this year is essential to our national security.

Without our strong desire to move further into the era of negotiations, continued deployment of Safeguard this year is essential for three basic reasons:

1. It responds to the evolving and increasing Soviet offensive weapons threat without requiring an immediate alternative decision by the United States to go forward with additional actions on offensive weapons.
2. It responds to the continuing Chinese progress in nuclear weapons.
3. It preserves our positive position in Strategic Arms Limitation Talks (SALT) while giving the President needed flexibility to respond to the Soviet and Chinese threats.

1. Need for Additional Safeguard Deployment

In our last meeting, I described in detail the serious nature of the growing threat. Deputy Secretary of Defense David Packard will discuss costs and will review for you the relationship of the Safeguard defense to the President's desire to move further into the era of negotiations. Dr. John S. Foster, Jr., Director of Defense Research and Engineering, will cover highlights of the threat and will give you a description of the Safeguard system's capabilities and our technical progress to date.

The need for a Modified Phase II Safeguard defense is clear because of the nature and character of the Soviet threat to our landbased forces and because of the potential Chinese threat to a portion of our population.

Given President Nixon's determination to postpone additional actions on U.S. offensive systems this year in order to advance prospects for

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success at SALT, further progress on Safeguard deployment becomes the only viable course available in Fiscal Year 1971. As the President noted, "Each phase of the deployment will be reviewed to insure that we are doing as much as necessary but not more than that required by the threat existing at that time."

I believe the Modified Phase II deployment we are recommending for FY 1971 is the minimum we can and must do, both in cost and in system development, to fulfill the President's national security objectives.

## 2. Review of Current Options

In our FY 1971 Safeguard review, we considered several alternatives. One was to cancel the Phase I deployment. This would have been adopted only if we had become convinced that (1) the system would not work properly, or (2) the completed system would be inadequate to meet the President's objectives, or (3) the threats had not developed, either because of arms limitation talks or for other reasons. Since none of these conditions prevailed, this option was rejected.

A second alternative, continuation of Phase I only with additional research and development, would have enabled us to proceed toward one desirable objective -- the operational check-out of the system. However, in view of the continued growth of the Soviet threat and the prospect of Chinese deployment of an ICBM force in the mid-1970's, we could not justify delaying a further step to protect ourselves against these dangers.

We also considered but did not recommend the deployment of additional forms of ballistic missile defense, such as a dual-purpose Minuteman system, mobile systems, or a forward-based system; these systems would not achieve the multiple objectives of Safeguard. We also examined the effectiveness of the full Safeguard system in protecting against the Chinese threat and in defending Minuteman.

## 3. The Proposed Safeguard Program for FY 1971: Modified Phase II.

Now let me turn to the program we are recommending this year. For FY 71, we propose authorization to deploy one additional Safeguard site at Whiteman Air Force Base, Missouri (in the Minuteman field) at an expenditure in FY 1971 of less than \$100 million more than that needed for Phase I work already approved by the Congress.

We also recommend that the FY 1971 program include the deployment of additional Sprints at Grand Forks AFB, North Dakota, and Malmstrom AFB, Montana. This would raise the number of Sprints at these sites to the Phase II level, thus further increasing the total number of interceptors capable of defending Minuteman. This will require additional acquisition of

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small parcels of land and additional silo construction at Grand Forks and Malmstrom. With regard to the additional Sprint missiles themselves, since the purchase of only the long lead-time missile components is required in FY 71, the decision to produce and deploy them can be reviewed later.

Also, we recommend for FY 71 authorization to undertake the long lead-time task of advanced preparation work for five more sites. This task includes site survey and engineering, land acquisition and purchase of some long lead-time items, but does not commit us to the deployment of radars or missiles. The five sites are Northeast, Northwest, the National Capital Area, Warren Air Force Base in Wyoming, and Michigan/Ohio.

The proposed FY 1971 program maintains the President's options to move further toward a 12-site Full Phase II Safeguard system, if necessary, or to curtail the deployment if threat developments permit. This deployment continues orderly, controlled progress toward the objectives set forth by President Nixon but does not commit us to Full Phase II deployment without further review and further decisions. The deployment can be modified as required by changes in the threat, arms limitation negotiations or unilateral actions of the Soviets or Chinese Communists.

Should it be required, the Full 12-site deployment could be installed by the late 1970's if there were FY 72 authorization for the remaining nine sites, including the five sites for which only advanced preparation authority is being requested in FY 71. The 12-site deployment would provide substantial area defense of the United States population for a number of years against Communist Chinese or Nth country attack and defense adequate to permit most of our alert bomber force to take off even if attacked by depressed trajectory submarine-launched ballistic missiles (SLBMs). Defense against an accidental launch from any source also would be provided by the 12-site deployment.

As a prudent hedge against possible future needs, this proposed, minimum FY 1971 program would increase the Minuteman defense level as the three sites in the Minuteman fields become operational. The first two sites, which constitute Phase I, will be installed by early 1975. The third site, Whiteman AFB, would be installed in 1975 if approved for FY 1971. Also, we would increase the number of SPRINTs at the first two sites for further protection of Minuteman.

The choice of the particular sites for which full or advanced preparation authorization is requested in FY 71 is based on the following reasoning:

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The one site for which deployment authorization is requested, Whiteman, contributes to all three Safeguard objectives, as announced by President Nixon, on March 14, 1969. These objectives are:

-- "Protection of our land-based retaliatory forces against a direct attack by the Soviet Union."

-- "Defense of the American people against the kind of nuclear attack which Communist China is likely to be able to mount within the decade."

-- "Protection against the possibility of accidental attacks from any source."

Advanced preparation authority is requested for the National Capital Area site because of the importance of protecting the National Command Authority.

We recommend advanced preparation for Warren AFB, because if deployed, it would complete the four-site Safeguard defense of Minuteman, as well as contributing to area defense.

We recommend advanced preparation for Northwest, Northeast and Michigan/Ohio:

1. To preserve the option of timely completion, if necessary, of the Perimeter Acquisition Radar (PAR) line along our northern border which would be essential for area defense of the most heavily populated areas of our nation, and

2. To provide a start on two sites (Northwest and Northeast) with seaward-looking PAR faces which would be needed to detect SLBM's.

#### 4. Costs

The Department of Defense (DoD) FY 71 budget submission includes an authorization request of \$1.49 billion for Safeguard. This amount is requested for FY 71 to continue the approved Phase I deployment, to deploy additional SPRINTs at Phase I sites, to commence deployment at the one additional site, and to undertake advanced preparations at the five potential future sites.

I want to emphasize that if we consider expenditures alone for FY 1971, the funds that will be spent for the Modified Phase II portion of the program will be less than \$100 million. This is why I have characterized the President's decision as the most prudent and least costly step we can take in FY 1971 to preserve safety and flexibility. Total FY 1971 spending for the Congressionally

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approved Phase I and the proposed Modified Phase II program will amount to some \$920 million.

Dave Packard will give you a full report on Safeguard costs.

Now, Mr. Chairman, I would like to ask Dr. Foster to review very briefly the threat we face and technological progress on Safeguard in the past year. Then I would like Deputy Secretary Packard to briefly relate the vital inter-relationship of this Modified Phase II step with the President's negotiation policy, particularly SALT, and to discuss costs.

And after that, we would then be pleased to take your questions, Mr. Chairman.

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STATEMENT OF DEPUTY SECRETARY OF DEFENSE DAVID PACKARD

ON

FY 71 MODIFIED PHASE II SAFEGUARD PROGRAM

24 FEBRUARY 1970

Dr. Foster has outlined for you the technical progress on the system and the growth in the threat that has accrued during the past year. Before I discuss other considerations that went into our recommendation I would like to make a few comments on the technical side and on the growing threat.

First, I would like to confirm that there has been excellent technical progress. The problems which have shown up in testing are normal to this kind of a program. Some have already been corrected and solutions are at hand for the others. I am particularly encouraged by progress on the computer software. The first big test of the system will be a space-point intercept by a Spartan missile in the Spring and an intercept of a real target by a Spartan missile in the Fall of this year.

I am convinced that our plan to proceed with the two operating sites in Phase I was a good decision. It has focused the work on the actual problems of an operating system. It has given the management team a real incentive because these people have had before them an important and a specific goal.

Dr. Foster has limited his discussion of the threat to the actual progress the Soviets and the Chinese have made during the year. We are particularly concerned about the continued rapid build-up of the Soviet land-based and submarine-based missile forces. If this build-up continues, they could have superior forces in both of these areas by 1975. It is imperative, therefore, that we keep up the momentum of this defensive program. Otherwise, as Secretary Laird has said, we would have to consider further actions concerning our offensive forces to be sure we have strategic nuclear sufficiency in the late 1970s.

Success in SALT, even partial success, will serve to limit further build-up of the threat and will limit our need to augment our strategic nuclear forces beyond presently planned programs. This consideration weighed heavily on our recommendation to proceed with a minimum Phase II step at this time.

The Safeguard plan we are presenting to you should be considered as one which requests (1) full approval to proceed with deployment of the Whiteman site together with added Sprintsat the original Phase I sites to enable us to expand Minuteman protection; (2) approval of long lead-time activities to make possible

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the rapid addition of further sites in the future should they be required and authorized.

I am as anxious to have SALT succeed as anyone in this country. I am just as anxious to be sure we do not jeopardize the security of the country by taking actions on the hope that SALT will succeed.

The authorization of Phase I Safeguard did not delay the beginning of SALT. In fact, the Russians agreed to begin the talks shortly after the Senate approved the military authorization bill including Phase I of Safeguard. The Russians are continuing the build-up of their strategic forces while they are planning to continue the arms limitation talks with us. Since the beginning of SALT in Helsinki last November, the Soviets have test-fired more than twice as many strategic missiles as we have. It is imperative that we continue with our strategic programs, such as Safeguard, until and unless we achieve an agreement with the Soviets which will enable us to preserve the security of the country in some other way.

The Phase II program which we are presenting for your approval is the minimum step we can recommend at this time and still maintain sufficient strategic strength. It is consistent with a low level of ABM should that be the outcome of SALT; it preserves the option to proceed either to an area defense against the Chinese or to a higher level of protection of our land-based missile force should that be required either with or without an arms limitation agreement.

I want to emphasize the Phase II step we are recommending involves less than \$100 million in expenditures in FY 1971. This is because we are asking only to proceed with those long lead-time steps necessary to maintain the program momentum. We have reviewed the planning for the full twelve-site system in making this recommendation. Taking this minimum step at this time will stretch out the program to some extent. We have done this also to keep the out-year costs within reason if we go ahead with the full system. This plan would enable us to have the full 12-site system operational by the late 1970's with the costs in any year carefully limited, although if all 12 sites were authorized in FY 1971 and if we imposed no limitation on the rate of expenditure, the full 12-site system could be deployed by the mid-1970's.

This stretchout in the total Safeguard program will increase total costs somewhat. We believe it is an acceptable risk in view of the threat and, of course, success in SALT will be a factor in both the level and the schedule of the Safeguard program.

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As Mr. Laird said, the total budget authority we are requesting for the FY 1971 Safeguard program is \$1.49 billion. However, the total DoD acquisition costs (which include military construction, purchase of radars and missiles, the cost of research and development, test and evaluation, but do not include operating costs) for the Phase I sites and a new Phase II site at Whiteman are estimated to be \$1.42 billion for FY 1971 and \$5.9 billion total. The \$5.9 billion includes development through system testing of the Improved Spartan missile and the addition of Sprints in the Phase I fields. These figures compare with approximately \$1 billion that would be required in FY 71 if the program were restricted to the congressionally-approved Phase I only, and a total DoD acquisition cost of \$4.5 billion for Phase I only.

Development of improved components for hardsite defenses, consisting of a new radar and its data processor and possible Sprint improvements, is provided for in our FY 71 budget of \$158 million for advanced ballistic missile defense (up from \$110 million in FY 70). This is not part of the Safeguard program because no decision has yet been made to deploy these new components.

Proceeding now to begin Phase II deployment maintains the option -- as mentioned earlier -- to complete the Full Phase II by the late 1970s should this be required later. In this case, we now estimate the total DoD acquisition cost would be \$10.7 billion (December 1969 price levels). This compares with a figure of \$9.1 billion (December 1968 price levels) which I reported to the Congress last year.

The increase of \$1.6 billion in our estimate is due to several causes. One is inflation in price levels that occurred between December 1968 and December 1969. Another increase is caused by the stretchout in the time until deployment can be completed. Stretchout increases program costs because it causes the retention of trained personnel and continuation of support activities over a longer period of time. Also, increases resulted from certain design changes found necessary and advisable during the year (for example, additional interceptors were added in Phase II for operational testing), and from more detailed estimates for the work earlier contemplated. Of the total increase \$395 million, or 4 per cent of the previously reported estimate, is due to inflation; \$575 million, or 6 per cent, is due to the stretchout of deployment; \$650 million, or 7 per cent, is due to design changes and better estimates.

These Safeguard costs are exclusive of operating costs, which, for the period after the completion of deployment, are estimated to range between about \$100 million annually for a two-site deployment and \$350 million annually for a Full Phase II.

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Finally, these costs do not include AEC costs related to ABM which would total \$1.2 billion for the Full Phase II deployment (exclusive of the costs for warheads for the Improved Spartan whose costs cannot yet be estimated firmly).

I might also point out, Mr. Chairman, that these estimates do not include certain indirect costs that are budgeted elsewhere. Examples of these indirect costs are range support and family housing.

You will note that acquisition costs and operating costs do not increase in exact proportion to the number of sites deployed. This is because there is an "overhead" level of personnel and services necessary to plan, supervise and support the deployment regardless of the number of sites. Also, costs vary from site to site depending on the number of radars and missiles.

I want to tell these committees very frankly that if such factors as inflation, stretchout and design improvements occur in future years as they did in the past year then we could experience some continuing cost growth for this defense. I am confident the Safeguard program is well managed, and I will regularly advise Congress of its progress and of my best cost estimates for it, conducting the program on the most economical basis consistent with national security, and consistent with the President's decision that we do only the minimum necessary when it is necessary. In that context, let me repeat: I am convinced that our plan last year to proceed with Phase I was sound and I firmly believe that we need authorization to begin Phase II in FY 71.

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STATEMENT BY DR. JOHN FOSTER, DIRECTOR,  
DEFENSE RESEARCH AND ENGINEERING

ON

FY 71 MODIFIED PHASE II SAFEGUARD PROGRAM

24 FEBRUARY 1970

In the next few minutes I propose to cover briefly the concepts of operation of the Safeguard system. This will serve to introduce its key components. I will describe the technical progress made on each one. Following that I will review the changes in the threat that have occurred during the last year.

You will recall that Safeguard combines the concepts of area defense and terminal defense. The area defense portion uses the Perimeter Acquisition Radar (PAR) to acquire the targets as they come over the horizon. Information from the PAR is sent to the Missile Site Radar (MSR) which commands the launch of a Spartan interceptor and guides it to the vicinity of the incoming warhead. At the point of closest approach, the MSR commands the defensive missile's warhead to detonate.

The yield of the Spartan warhead is sufficiently large to assure destruction of the incoming warheads. Because the Spartan missile has an effective range of several hundred miles, a single battery can cover a large area of the country approximately 600 x 900 miles. Because this area is so large, only 12 sites are required to provide complete coverage of the U. S.

We are also developing a new version of the Spartan missile called Improved Spartan which will carry a smaller warhead but to much higher velocities. This missile will enable the system to more effectively intercept SLBMs and depressed trajectory ICBMs. They will have a larger area capability than the standard Spartan and reduce the nuclear effects on the system. The improved Spartan should be available for deployment sometime in 1976. We are developing these two missiles since they each perform different functions.

The second aspect of the Safeguard concept concerns its capability for terminal defense; that is, the defense of the battery itself or other objects in the vicinity of a few tens of miles. The terminal defense portion takes advantage of the atmosphere which slows down all but the heaviest objects as they penetrate the atmosphere. In this way the atmosphere is



used to filter out light-weight objects such as tank fragments, chaff, balloons, etc.

When the incoming warhead has emerged from the cloud of incoming objects, the missile site radar launches a Sprint missile and guides it to intercept the course of the incoming warhead. Again as in the case of the Spartan the missile site radar commands the detonation of the Sprint warhead at the point of closest approach. The yield released in this case is in the kiloton range, but because the miss distances are quite small, this yield is adequate to assure destruction of the incoming warhead.

This terminal defense feature of the system is the mode upon which the defense of the Minuteman force primarily rests. It is much more difficult to counter than the area defense feature of the system because even sophisticated light-weight confusion devices, such as chaff, are ineffective. If the Soviet threat to Minuteman should increase beyond levels that could be handled by the Phase II Safeguard multi-purpose defense, we might wish to augment the system by deploying several terminal defense radars in each Minuteman field. For this reason we have budgeted for development of a new radar, smaller and less expensive than the MSR. The new radar, although less capable than the MSR, could be deployed in greater numbers to improve defense survivability.

Let me review briefly the progress we have made on each of these components during the last year. The perimeter acquisition radar, as you will remember, is well enough understood so that we did not consider it necessary to build a full-scale prototype. Components of this radar have been built and are under test. We expect this year to release 95% of the design of the PAR for production. We have encountered no serious problems in engineering the PAR.

A full-scale MSR has been constructed and installed on Meck Island in the Kwajalein Atoll. It has been operated at full power and has met or bettered its design specifications. The MSR computer has also been installed at Meck and four data processors are now in parallel operation. The initial software packages for checking out the system are now being installed. The radar computer interface is operating satisfactorily. The radar-computer-software combination has been made to acquire and track local objects, and in December 1969 it tracked ICBMs fired from Vandenberg. The software development which was the highest risk effort a year ago, is progressing very satisfactorily. Software for firing and controlling missiles is now being installed.

The Spartan missile is an outgrowth of the Nike Zeus interceptor which accomplished successful interceptions of ICBMs in 1961. The Spartan has



had 15 R&D firings, 11 successful, 2 partially successful and 2 failures. The first firing of a Spartan from Meck to intercept an ICBM under MSR control is scheduled for this fall. The warhead development and testing for Spartan is on schedule.

The Sprint embodies newer technology than the Spartan. It is a very high performance, relatively short-range missile which can fly out about 10 nautical miles in 10 seconds. As you will remember from terminal defense, the Sprint must be capable of achieving an intercept when launch has been delayed until the incoming warhead has entered the atmosphere. The Sprint interceptor is now being tested at White Sands Missile Range. During 1969 Sprint tests yielded 7 successes, 2 partial successes, and 2 failures. The causes of the failures have been diagnosed and design corrections have been implemented.

I have had the opportunity recently to visit the Bell Telephone Laboratories in Whippany, New Jersey, where Safeguard system engineering is done and I have visited the test range where Safeguard components are undergoing R&D testing.

As anticipated, the Missile Site Radar successfully tracked two ICBMs as scheduled in December 1969. Also, in December, the data processing system was expanded as planned from two to four processors which have operated successfully in parallel. Also since then, 3 more Spartan missiles have been fired (Oct., Nov., and Dec.) and all were successful. Four more Sprint shots have been made (2 in Oct., 1 each in Nov. and Dec.); of these, one was successful, one was a partial success, and two were failures. As I said earlier the cause of these two failures has been diagnosed and engineering corrections are being made. The Sprint development tests being conducted at White Sands will be concluded shortly, and the system tests will be started at Kwajalein.

I would summarize the technological progress of the last year by saying that we have greater confidence in the design of the system, the performance of the components and, in particular, the assurance that we will be able to meet our software schedule.

The Army team, under General Starbird's leadership, is on top of the program, and the contractors under Bell Telephone-Western Electric as the prime, are doing an exceptionally able job.

### Threat

Turning now to the threat, it is particularly useful to compare the situation a year ago and today.



A year ago the Chinese were in the process of tearing down and rebuilding their ICBM launch site. Their thermo-nuclear test program was moving very quickly. They had detonated a 3 megaton warhead having a weight suitable for delivery by ICBMs.

Today the Chinese test site appears to be essentially complete. On this basis one could predict a test of an ICBM within the current year.

A year ago the Soviets had under construction or operational over 225 SS-9s and over 700 SS-11s. Today there are over 275 SS-9s under construction or operational and over 800 SS-11s.

As you know, our particular concern with regard to these missiles is the threat that they pose to Minuteman. Tests of three reentry vehicles per SS-9 have continued, but they have not demonstrated to us the flexibility necessary to target each warhead against a different Minuteman silo.

The SS-11s could be used against Minuteman but to date the required accuracy improvement has not been demonstrated.

Last year the Soviets had 6 to 9 Yankee (Polaris-type) submarines launched with an additional 8 to 12 under construction. As of this date they have launched several more and have an additional 10 to 12 under construction.

As you know, it is these submarines with their missiles that will pose a threat to our alert bomber force.

In summary, with regard to the Soviet Union, the threat has advanced at least as fast as had been predicted and the Chinese threat, while delayed, poses a real problem.



EXCERPTS FROM ARTICLE  
"BORN IN BATTLE"

BY USSR DEFENSE MINISTER  
MARSHAL OF THE SOVIET UNION A. GRECHKO  
(PRAVDA, FEBRUARY 23, 1970)

Today the entire Soviet people and their troops and also our friends abroad are ceremoniously marking the 52d Anniversary of the Soviet Army and Navy. This year this date is being celebrated in the atmosphere of the nationwide enthusiasm engendered by the approaching centenary of the founder of the Communist Party and the Soviet State, Vladimir Ilich Lenin, and the 25th Anniversary of the Victory over Fascist Germany in the Great Patriotic War.

The great patriotic war was the greatest test for the Soviet State and the entire Soviet people and their armed forces. This was the world's first socialist state's greatest clash with the most evil enemy of all progressive mankind, the shock detachment of international imperialism--German Fascism.

In the postwar period the Soviet Armed Forces, true to the Leninist behests and their own international duty, are reliably guarding the peace and security of the Socialist Motherland. At the present time the world is uneasy. The U.S. imperialists continue to wage their bloody struggle against the heroic people of Vietnam. There is no end to the military operations in the Near East. The actions of the American-British bosses of the aggressive North Atlantic Bloc are also of great danger for the cause of peace. The West German revanchists are rearing their heads under this Bloc's cover. They are demanding revision of existing borders in Europe and are soliciting nuclear weapons for the Bundeswehr.

In the complex conditions of the modern international situation the Communist Party and the Soviet Government--recalling the Leninist behests--are displaying constant concern for strengthening the defense capability of the Soviet Union and the entire Socialist camp. The party and government proceed from the fact that the Soviet Armed forces must be constantly in full combat readiness in order that, if the need arises, they can reply to any intrigues by the enemies of peace with a crushing blow.



We have something to defend, and we have the means to defend it. The Soviet Army and Navy are equipped with first-class armaments. The strategic missile forces comprise the basic strike force of the Soviet armed forces. They are equipped with powerful missiles with nuclear warheads capable of inflicting a crushing blow upon an aggressor in any part of the planet.

The technical equipping of our ground forces, who have received new combat means, has altered radically in recent times. This has considerably enhanced their firepower and made them more mobile and versatile on the battlefield. The ground forces have nuclear weapons and various types of missiles--from antitank to operational-tactical--at their disposal; they possess modern tanks adapted for operations under conditions of nuclear war, and they are equipped with modern standardized small arms and new types of engineer equipment.

The Soviet Air Force is based on supplies of aircraft that are supersonic and rocket carrying and can operate at long ranges and high altitudes. They can fulfill combat tasks at any time of day and night, no matter what the weather. Our military air force can perform strategic tasks independently or in conjunction with other arms of the armed forces.

The strength of our ocean-going Navy also has grown immeasurably. Nuclear submarines armed with powerful missiles are the basis of its strike force. Many surface ships have become missile carriers.

Great changes also have taken place in the country's air defense forces. The combat means we possess are capable of reliably striking enemy aircraft and missiles, regardless of altitude and velocity, at great distances from the defended targets.

Radioelectronics, various automatic installations, and computers are being introduced more and more extensively into the Soviet Army and Navy. The achievements of science and technology are extensively utilized.

Armed forces personnel are being faced with new and considerably more difficult demands in connection with the technical revolution that has taken place recently in military matters. In modern conditions there has been a sharp increase in the complexity of troop control, a reduction in the time a commander has for taking decisions, and an increase in the significance of the moral-political and psychological training of the troops.



In the past training year, which took place under the banner of preparations for the Leninist jubilee, Soviet soldiers honorably fulfilled the tasks set them. There was a considerable increase in the level of their combat readiness. Despite the increased demands and the reduction in the terms of military service for privates and sergeants, there has been an increase in the number of advanced subunits, units, and ships. Troop and command staff exercises and the recent long voyages by ships of the fleet have demonstrated the high state of combat training of personal and the increased operational-tactical skill of commanders.

The exercises carried out in conjunction with the fraternal armies of the Warsaw Pact countries not only demonstrated mastering of combat interaction but also strengthening of international concord. Now the Joint Armed Forces of the Warsaw Pact Member States are invincibly safeguarding peace and the achievements of socialism. Formations and units of the ground forces, Air Force, Navy, and air defense have been singled out from the national armies for mastering combat interaction. There is in existence a military council of the Joint Armed Forces; the provision on the Committee of Warsaw Pact Member States' Defense Ministers has been approved.

On the day of the 52d anniversary of the Soviet Army and Navy, which is being marked on the threshold of V.I. Lenin's birth centennial, we can proudly assure the Soviet people that the soldiers of the valiant armed forces are reliably guarding our motherland's borders and the peaceful creative labor of the Soviet people--the builders of Communism.



...the past few years, which has been the result of  
...the fact that the level of their combat readiness  
...the reduction in the terms of military service for private and reserve  
...there has been an increase in the number of advanced technical units  
...and a large group of reserve units and the reserve force  
...by the fact that the level of their combat readiness  
...constant training of personnel and the increased overall combat  
...skills of commanders and staff officers. This has led to an increase  
...The overall picture is one of a steady increase in the level of  
...of the Warsaw Pact countries and the level of their combat readiness  
...of combat readiness and the level of their combat readiness  
...Now the Joint Armed Forces of the Warsaw Pact Member States are  
...increasing and the level of their combat readiness is increasing  
...Formations and units of the ground forces, air forces, navy and  
...are being increased and the level of their combat readiness is increasing  
...mastering modern weapons and the level of their combat readiness is increasing  
...command of the Joint Armed Forces of the Warsaw Pact Member States has been approved  
...of Warsaw Pact Member States' Defense Ministers has been approved

On the day of the 50th anniversary of the Soviet Army and Navy  
...which is being marked on the territory of V.I. Lenin's birthplace  
...we can proudly say that the Soviet people are making a contribution to the  
...armed forces are reliably guarding our motherland's borders and the  
...successful defense of the Soviet people's fatherland, the Fatherland of Communism.  
...is, it is a matter of honor for every Soviet citizen to be a member of the  
...armed forces of the Soviet Union.

...the fact that the level of their combat readiness is increasing  
...of the Warsaw Pact Member States is increasing  
...of the Warsaw Pact Member States is increasing

...the fact that the level of their combat readiness is increasing  
...of the Warsaw Pact Member States is increasing  
...of the Warsaw Pact Member States is increasing

QUESTIONS      AND      ANSWERS





## CONTENTS: QUESTIONS AND ANSWERS

1. Threat
2. Marshal Grechko on Soviet ABM
3. Purpose of the Soviet Buildup
4. SALT Talks Preclude ABM
5. Effect of a SALT Ban on MIRV
6. SALT Comments
7. JCS Support
8. Economic or Military Decision
9. Bomber Defense from Submarine-Launched Missiles
10. Why Whiteman AFB
11. Location of Modified Phase II Sites
12. Safeguard National Command Authority Area Site
13. Why Now?
14. Postponement
15. Purpose of Phased Safeguard Program
16. National Programs Priority
17. Launch-on-Warning
18. First Safeguard Intercept
19. Soviet MIRVS
20. U.S. Options if USSR Continues Buildup
21. USSR SLBM Deployment only a Deterrent



22. U.S. vs USSR ABM
23. Relationship to Soviet ABM
24. Communist Chinese Penetration Aids
25. Chinese ICBM Test
26. The Significance of a Small Communist Chinese ICBM Force
27. Need for Defense from Communist China
28. Chinese Threat Slip
29. Chinese Launch Facilities
30. Sympathetic Fusing
31. ABM Explosion Effects
32. Safety and Nuclear Accidents
33. Possibility of Accidental Nuclear Explosion
34. Radar Attack
35. Presidential Decision Delays
36. Better Defense of Minuteman
37. Population Vulnerability
38. Congressional Action
39. Scientific Opinion
40. Safeguard as a Threat to Soviet Deterrent
41. Safeguard Growth Potential
42. Three Deterrent Forces

43. Program Cost Estimates
44. Status of Safeguard Funds for Phase I and Phase II
45. Cost Growths to Date
46. Contractor Employees
47. Direct Government Employees
48. Construction Delays
49. Non-Linearity of Costs
50. AEC Costs for Modified Spartan Warhead
51. Fiscal Constraints
52. Advanced Preparation vs Authorization
53. Advanced Preparation Work
54. Will Eventual Program Reach \$20-50 B?
55. Possibility of Safeguard Obsolescence
56. Optimum Radar
57. Requirement for Phase I Experience before Phase II Proceeds
58. Threat Speed vs Deployment Speed
59. Modified Spartan Missile
60. U. S. Aggressive Attitude
61. Credibility of Safeguard System Performance Based on Test Program
62. Computer Capability
63. Won't Work
64. Delay Modified Phase II Deployment Until Phase I is Completed
65. Soft ware
66. Operational System Deployment at Kwajalein





## THREAT

QUESTION: What threat caused the decision to proceed with Modified Phase II?

ANSWER: President Nixon, in his report to the Congress on U.S. Foreign Policy for the 1970's, discussed the strategic threats to this nation. Among his comments were:

... "The Soviet missile deployments are continuing, whereas ours have leveled off. In the 1970's we must also expect to see Communist China deploy intercontinental ballistic missiles, seriously complicating strategic planning and diplomacy. "

... "First, the Soviets' present build-up of strategic forces, together with what we know about their developments and test programs, raises serious questions about where they are headed and the potential threats we and our allies face. These questions must be faced soberly and realistically.

... "...there is a serious threat to our retaliatory capability in the form of the growing Soviet forces of ICBM's and ballistic missile submarines, their multiple warhead program for the SS-9 missile, their apparent interest in improving the accuracy of their ICBM warheads, and their development of a semi-orbital nuclear weapon system. That this threat continues to be serious was confirmed by my Foreign Intelligence Advisory Board -- an independent, bipartisan group of senior outside advisory -- which recently completed its own review of the strategic threats we face. "

... "...we cannot ignore the potential Chinese threat against the U.S. population, as well as the danger of an accidental or unauthorized attack from any source. Nor can we dismiss the possibility that other countries may in the future acquire the capability to attack the U.S. with nuclear weapons. "

Secretary of Defense Laird's Defense Report to the Congress gave more specific details of the threat. The following is a summary of his comments:

1. Last year it was estimated that the Soviets had a total of 900 ICBM launchers operational as of 1 September 1968, compared with 570 in mid-1967 and 250 in mid-1966. This growth has continued, and it is estimated that they had 1,060 operational ICBMs on launchers as of 1 September 1969, an increase of 160 in one year. Almost all of this increase is accounted for by the new SS-9s and SS-11s. The remainder of this increase is accounted for by deployment of the new solid fuel SS-13.



The estimated number of older ICBMs (SS-7 and SS-8) for that date is the same as reported for 1 September 1968.

By mid-1970, it is projected that the Soviets will have over two hundred more operational ICBMs on launchers. The number of operational SS-9s and SS-11s is expected to increase substantially by mid-1970. In addition, a small increase in numbers of SS-13s is predicted.

2. The Soviets are continuing to develop a retrofired weapon which could perform as a depressed trajectory ICBM, a FOBS, or a dual system. Because of the uncertainties concerning the characteristics and purposes of this weapon system, no deployment estimates are possible. Therefore, they are not considered as separate systems at this time but instead are counted with the SS-9, which is the booster used for these weapons. It is possible that a small number of these weapons are already deployed in SS-9 silos.

3. Submarine Launched Ballistic Missiles (SLBM). As already noted, the Soviet Union has surpassed us in numbers of ICBM launchers; we believe that they are now building a ballistic missile submarine force which will be roughly comparable in numbers to our present Polaris fleet. Construction of the new Y-class nuclear-powered ballistic missile submarine with 16 missile tubes continues. We estimate that eight or nine have been launched and several of this class were operational as of 1 September 1969, and several more by 1 February 1970. The two production facilities for these subs can accommodate a total of 12 complete hulls. Even at a rate of construction of only six a year, their force could equal ours, in terms of numbers, by 1975.

4. A year ago the Chinese were in the process of tearing down and rebuilding their ICBM launch site. Their thermo-nuclear test program was moving very quickly. They had detonated a 3-megaton warhead having a weight suitable for delivery by ICBM's. Today the Chinese test site appears to be essentially complete. On this basis one could predict a test of an ICBM within the current year.

5. During the past year the Soviets appear to have brought a number of the Moscow ABM complexes (ABM-1) to an operational status. Testing of what appears to be an improved GALOSH missile has been noted, and such a missile could be available in the near future. No firm estimate of possible capabilities of this improved missile is available. Research and development related to a new ABM system has also continued.



## MARSHAL GRECHKO ON SOVIET ABM

QUESTION: What has Soviet Marshal Grechko said about their ABM?

ANSWER: USSR Defense Minister and Marshal of the Soviet Union Andrei Grechko, in an article marking the anniversary of the Soviet Army and Navy on February 23, stated: "Great changes also have taken place in the country's air defense forces. The combat means we possess are capable of reliably striking enemy aircraft and missiles, regardless of altitude and velocity, at great distances from the defended targets."



## PURPOSE OF THE SOVIET BUILDUP

QUESTION: The Soviets are not developing a first strike capability. Aren't they just trying to achieve parity in force capabilities, strengthening their deterrent?

ANSWER: The Soviets already have enough offensive weapons-- Intercontinental Ballistic Missiles, Submarine Launched Ballistic Missiles and bombers--to ensure deterrence. Parity in number of ICBMs has already been achieved. Nevertheless, they continue to increase their offensive forces, and to conduct tests which could be aimed at increasing their accuracy (not required for deterrence). Consequently, although we cannot know the Soviet intention, we must consider the possibility that they may achieve a first strike capability.

## SALT TALKS PRECLUDE ABM

**QUESTION:** In view of the Strategic Arms Limitation Talks results to date, is further deployment justified?

**ANSWER:** The Strategic Arms Limitation Talks have not progressed sufficiently to warrant such a conclusion. Furthermore, no agreement between the U.S. and the Soviet Union would alleviate the Communist Chinese ICBM threat. It is unlikely that any SALT agreement would entirely eliminate the Soviet missile threat to our retaliatory forces. The purpose, however, of the phased Safeguard program as outlined by President Nixon is to allow for annual review of the need for missile defense based on factors including future progress in SALT negotiations.



## EFFECT OF A SALT BAN ON MIRV

QUESTION: Wouldn't a Strategic Arms Limitation Talks ban of the Multiple Independently-targeted Reentry Vehicle eliminate need for SAFEGUARD?

ANSWER: A MIRV ban, even if controllable and enforceable would not eliminate the threat posed by the large number of Soviet ICBMs with single warheads provided with sufficiently high accuracy. A MIRV ban still would not eliminate the Chinese ICBM threat or the Soviet threat to our bombers, to the National Command Authority nor solve the problem of accidental launch at the United States by any nuclear power.

Secretary of State William P. Rogers, interviewed on the "Today" Show on NBC on March 17, 1970, on the effect a suspension of multiple warhead weapons would have on the United States' negotiating position at SALT, said:

"Well, I don't see why we seem, in this country, to feel that we should take unilateral action in disarmament.

"We are now in the position of talking to the Soviet Union about arms limitation. There is nothing that the Soviet Union is doing to indicate to us that they've stopped any of their deployment, or stopped any of their testing.

"And, I don't see any reason why we should stop ours unilaterally. If the other side has some interest in working out an agreement in arms limitation, we are interested in it. We don't propose to do it unilaterally."

He pointed out that, furthermore, he did not believe the deployment of MIRV would have an adverse effect on the negotiations because "the Soviet Union knows perfectly well that we've been planning this deployment. So it comes as no shock to them."



## SALT COMMENTS

QUESTION: What have our key officials said about the relationship between the Strategic Arms Limitation Talks (SALT) and anti-ballistic missile programs?

ANSWER: President Nixon, in his statement on "U.S. Foreign Policy for the 1970's," February 18, 1970, said:

"Last year, I promised that each phase of the deployment will be reviewed to insure that we are doing as much as necessary but no more than that required by the threat existing at that time. I further indicated that in strategic arms limitation talks with the Soviet Union, the United States will be fully prepared to discuss limitations on defensive as well as offensive weapons systems.

"The further steps I shall propose will be consistent with these pledges. The Secretary of Defense will put forward a minimum program essential for our security. It fully protects our flexibility in discussing limitations on defensive weapons with the Soviet Union. It is my duty as President to make certain that we do no less."

Secretary of Defense Laird, in his "FY 71 Defense Program and Budget," February 20, 1970, said:

"Naturally, the recommendation we are making for the continued but carefully limited deployment of Safeguard defenses is in full recognition that Strategic Arms Limitation Talks with the Soviets will resume in April for the discussion of many complex issues. Among the facts that have led us to recommend this measured and modified continuation are both the continued growth of the Soviet strategic threat to the United States, and the fact that many possible agreements with the Soviet Union could include some form of missile defense--which would be consistent with our national security objectives and the legitimate security interests of the Soviet Union. The decision to begin a modified Phase II deployment does not preclude an agreement on low ABM levels."

Secretary of Defense Laird, in testimony before the Senate Armed Services Committee and the Senate Defense Appropriations Subcommittee, February 24, 1970, said:



"With our strong desire to move further into the era of negotiations, continued deployment of Safeguard this year is essential for three basic reasons:

"1. It responds to the evolving and increasing Soviet offensive weapons threat without requiring an immediate alternative decision by the United States to go forward with additional actions on offensive weapons.

"2. It responds to the continuing Chinese progress in nuclear weapons.

"3. It preserves our positive position in Strategic Arms Limitation Talks (SALT) while giving the President needed flexibility to respond to the Soviet and Chinese threats."

In the same testimony, he said:

"Given President Nixon's determination to postpone additional actions on U.S. offensive systems this year in order to advance prospects for success at SALT, further progress on Safeguard deployment becomes the only viable course available in Fiscal Year 1971. As the President noted, 'Each phase of the deployment will be reviewed to insure that we are doing as much as necessary but not more than that required by the threat existing at that time.'"

Secretary Laird, in a speech to the Reserve Officers Association, February 27, said:

"I feel very strongly that further deployment of the Modified Phase II Safeguard defensive system will give us needed additional time to vigorously pursue Strategic Arms Limitation Talks (SALT) without forcing us to take additional actions now involving our own offensive systems.

"Hopefully, success at SALT will move both the United States and the Soviet Union toward an era of peace--an era in which we should be able to devote even more of our national assets to non-defense national priorities."



Secretary Laird, at a press conference on February 24, gave the following answer to a question about U.S. -USSR anti-ballistic missile technology:

"I believe that from the standpoint of the technology of the antiballistic system we are ahead of the Soviet Union. I believe that that is one of the reasons that in all the reports that we received from Helsinki they indicated a great deal of interest in this. I believe that it's one of the most important bargaining tools we have as far as the SALT discussions are concerned."

Deputy Secretary of Defense David Packard, in testimony before the Senate Armed Services Committee and the Senate Defense Appropriations Subcommittee, February 24, said:

"The authorization of Phase I Safeguard did not delay the beginning of SALT. In fact, the Russians agreed to begin the talks shortly after the Senate approved the military authorization bill including Phase I of Safeguard. The Russians are continuing the build-up of their strategic forces while they are planning to continue the arms limitation talks with us. Since the beginning of SALT in Helsinki last November, the Soviets have testfired more than twice as many strategic missiles as we have. It is imperative that we continue with our strategic programs, such as Safeguard, until and unless we achieve an agreement with the Soviets which will enable us to preserve the security of the country in some other way.

"The Phase II program which we are presenting for your approval is the minimum step we can recommend at this time and still maintain sufficient strategic strength. It is consistent with a low level of ABM should that be the outcome of SALT; it preserves the option to proceed either to an area defense against the Chinese or to a higher level of protection of our land-based missile force should that be required either with or without an arms limitation agreement."

Ambassador Gerard C. Smith, Director of the Arms Control and Disarmament Agency, speaking to the Conference on Disarmament Control in Geneva, Switzerland, February 17, said:

"... We have sought to maintain flexibility in our future discussions as to facilitate the prospects for agreements. Thus, in reaching agreement on the organization of our work and the scope of our future talks, we have not sought to establish a formal agenda with priority listings of subjects, nor have we ruled out any strategic weapons system from further discussion."



## JCS SUPPORT

**QUESTION:** Did the Joint Chiefs of Staff support the Secretary of Defense in the decision to proceed with the announced Modified Phase II?

**ANSWER:** General Wheeler, the Chairman of the Joint Chiefs of Staff has said: "The Joint Chiefs of Staff participated in the government-wide review which took place this year. This program is in consonance with the overall program and the Joint Chiefs of Staff support it." \*

\* General Earle Wheeler, Chairman of the Joint Chiefs of Staff, at a news conference in the Pentagon, February 24, 1970.

## ECONOMIC OR MILITARY DECISION

QUESTION: Was the decision to modify the Phase II, economic or military?

ANSWER: As Secretary of Defense Melvin R. Laird has commented: "There were both considerations involved in the decision. The fiscal guidance that was given in regard to this program was to keep the program below a total authorized increase in the authorization for Safeguard--to keep it below \$1.5 billion, and keep the expenditures below \$100 million in Fiscal Year 1971. That's the total add-on as far as the Safeguard program was concerned. It's true that there were larger programs recommended, but keeping in mind the military requirements as well as the fiscal requirements, also keeping in mind the practical situation that we face, not only in the Congress, but also the considerations of SALT, all had a bearing on this particular decision.

"As you know, last year we outlined a program to go forward with 10 additional sites as far as acquisition and testing was concerned. I agreed at that time, at the request of the Congressional committees, and at the request of the Chairmen of the Senate Armed Services Committee and the Senate Appropriations Committee, not to proceed on any of the additional sites except the two that were approved.

"We did not go back for the site acquisition on all 10 sites for approval this year, but are only going back for five of the sites this year and construction on only one of the sites, which is in a Minuteman field." \*

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\* SecDef Laird, Press Conference, 24 February  
Washington, D. C.



## BOMBER DEFENSE FROM SUBMARINE-LAUNCHED MISSILES

QUESTION: How does the area defense portion of Phase II Safeguard help defend SAC bombers against the potential Soviet Y-class submarine-launched ballistic missile threat?

ANSWER: Because our SAC bomber bases are widely dispersed around the United States, an area defense system obviously would need to be designed to provide general coverage of areas in which bomber bases are located. Ours is. In effect, area defense, that which provides a light defensive umbrella over wide geographic areas instead of specific sites such as offensive missile fields, serves the double purpose of shielding against a light attack both our population and our bomber bases.

Also, unlike Minuteman missiles which have been reasonably "hardened" in deep concrete silos, our strategic bombers are relatively "soft" targets on air base runways. Their ability to "survive" depends to a great extent on having sufficient time to take-off and clear their bases by a reasonable distance before an incoming warhead could reach the base. Because of the ability of our shores and because of the lower trajectories which those missiles fly to their targets, the warning time for our SAC bases is reduced. This makes our SAC force especially subject to submarine missile attack. Because Safeguard is capable of providing our bombers those minutes needed for escape, an area defense to help protect this portion of our deterrent force becomes an important part of the Safeguard equation. (Similar defense against SLBMs of the National Command Authority could be provided by Safeguard.)

A year ago the Soviets had under construction or operational over 225 SS-9's and over 700 SS-11's. Today there are over 275 SS-9's under construction or operational and over 800 SS-11's. This increase of 50 SS-9's and 100 SS-11's matches rates of earlier years.

## WHY WHITEMAN AFB

**QUESTION:** You have asked for an additional site at Whiteman Air Force Base near St. Louis to protect the Minuteman missiles beased there, yet the President recently said that his decision to proceed with Phase II was based on the need to provide area defense against the Chinese threat and to give the U.S. a credible foreign policy in the Pacific. How do you rationalize placing the next site in the middle of the country, not in the Pacific Northwest?

**ANSWER:** The Whiteman site fulfills all three of President Nixon's objectives: a defense of our land-based deterrent forces; a defense of our population against the type attack the Chinese could launch; and a defense against accidental launch by any power. By locating at Whiteman, we protect additional Minuteman forces and provide an orderly step forward toward the defense which would be required to protect our bombers against submarine launched ballistic missiles and our population against a light attack by the Chinese Communists.



## LOCATION OF MODIFIED PHASE II SITES

QUESTION: Can you pinpoint the actual location of those sites which are only on the map described in general terms?

ANSWER: Secretary of Defense Melvin R. Laird commented, "No, I could not pinpoint the actual location. That's what we'd like to go forward with--the engineering and the site acquisition work on just five of the sites. We would like to go forward with the site survey work in Southern New England, the National Capital, Michigan-Ohio, Warren Air Force Base and the upper Northwest. Until we have the authority to go forward with that site survey work, I have a commitment with my former colleagues in the Congress that we will not proceed on the site survey work until they approve.

This is one of the important authorities that we are asking for. We are not asking for the full authority on the nine sites that you see on that particular map, but site survey work only on five, and construction at only one." \*

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\* SecDef Melvin R. Laird, Press Conference, 24 February, Washington, D. C.



## SAFEGUARD NATIONAL COMMAND AUTHORITY AREA SITE

QUESTION: What purpose will the Washington, D. C. site serve and where will it be located?

ANSWER: Defense of the National Command Authority (NCA) in Washington, D. C., is included in the protection that might be afforded by a SAFEGUARD deployment. The objective of the defense would be to provide additional decision time for the National Command Authority by protecting the Capital area for the maximum possible time. In this case, the SAFEGUARD capability must be provided close to Washington to give that protection.

The SAFEGUARD defense of the NCA would include a Missile Site Radar (MSR) and both SPARTAN and SPRINT missiles. Some of the missiles probably would be separated by a considerable distance. The SPRINT, considering its range, must be located close enough to provide the desired terminal defense of the city area. We will be examining possibilities to determine the best location for the MSR and SPARTAN. SPARTAN, of course, with its longer range could be located some distance from the city.

Faster-than -expected growth of the fleet of Soviet Polaris-like Y-Class submarines is of particular concern because of Washington's vulnerability to SLBM attack. A SPRINT defense would be needed to defend against such an attack. Last year the Soviets had 6 to 9 of these submarines launched with an additional 8 to 12 under construction. As of March, 1970, they have launched several more and have an additional 10 to 12 under construction.

Since no authorization has yet been given to deploy in the Washington area, no site or sites have been selected for SAFEGUARD in this area nor have the field surveys been conducted. When we begin, we shall examine for suitability first military property, then other Federal property, and finally if there is no suitable Federal property, other public or private property. In any case, the site selected must be one from which the mission of the SAFEGUARD deployment can be accomplished and must satisfy the various technical and tactical siting criteria for the deployment. In the event acquisition of public or private property is required, the fullest consideration will be given to such factors as local zoning restrictions and land use plans. We would, for example, coordinate closely with the National Capital Planning Commission and the National Capital Regional Planning Council. For an MSR-missile site, we would require title to approximately 300 acres and, for a missile site located away from the MSR, from 50 to 100 acres.



## WHY NOW?

QUESTION: Why do we need to proceed with Safeguard at this specific time?

ANSWER: Deputy Secretary of Defense David Packard answered that in his testimony to the House Armed Services Committee on March 9:

"First, Modified Phase II of the Safeguard defense enhances the prospects of meaningful negotiation and of success at SALT by permitting us to postpone hard decisions on additional offensive weapon systems actions this year.

"Second, it permits this restraint while still providing a prudent hedge against moderate threats; and at the same time, it preserves an option to meet, if necessary, a heavier threat.

"Third, it enables us to purchase this needed insurance in FY-71 at a very minimum expenditure -- substantially less than \$100 million.

"Fourth, it is a clear evidence that the United States intends to make the Nixon Doctrine foreign policy work by providing adequate defenses to prevent other nations from engaging in diplomacy by nuclear blackmail against us in coming years.

"In other words, Mr. Chairman, the evident and continuing threats from the Soviet Union and Communist China force upon us the necessity of continuing progress on the Safeguard anti-ballistic missile defense system in FY-71. We hope SALT will lead to a reduced Soviet threat but, meanwhile, it is essential to preserve, as far as is possible, all available strategic force options in this transitional budget year. As I indicated earlier, without the Safeguard increment provided by this budget, we would be faced now with the hard decisions about adding immediately to our offensive systems rather than being able to await hoped-for progress in SALT.

"Our decision now to proceed with further deployment of Safeguard gives us another year in which to pursue SALT without ourselves exacerbating the arms control environment through actions on offensive systems.

"An important part of our proposed program is its flexibility."

arms limitation agreements or unilateral actions by the Soviets or Chinese Communists. Modified Phase II deployment does not preclude agreement on a wide range of ABM levels. Many possible agreements with the Soviets could include some form of missile defense for purposes consistent with both countries' objectives in entering an agreement. In the meantime, it is essential that we continue this defensive program in the interests of our security."



## POST PONEMENT

QUESTION: Couldn't the U.S., without undue danger or cost, postpone for a year the decision to authorize more than Phase I?

ANSWER: Postponement for a year of a decision to authorize more than Phase I would increase both the cost and risk to the United States. For example, if no additional deployment were authorized in FY 71, but the full 12-site phase II deployment were authorized in FY 72, the total DoD acquisition cost of \$10.7 B would increase by about \$0.3 B and completion of the full deployment would be delayed by at least six months and probably for a much longer period. Although continuation during the next year of only the Safeguard research and development program and the two Phase I sites would continue the development, production and construction programs now underway, if the decision to commence Modified Phase II is delayed by a year, "gaps" would appear in these programs as Phase I work is completed. As these gaps occur, we would be forced to reduce production and engineering capability, especially highly skilled manpower, to avoid waste. With a later, possibly FY 72, authorization to complete additional site deployment we would have to rehire and retrain personnel in order to rebuild production and engineering capacity. It is not possible to estimate, therefore, how much more than six months' delay would occur. Such a delay would add to the risk to the U.S., since we would be unable to protect ourselves against the threats expected to exist before the deployment would be completed.

## PURPOSE OF PHASED SAFEGUARD PROGRAM

**QUESTION:** Doesn't additional deployment of Safeguard commit the U.S. to the full Safeguard deployment?

**ANSWER:** Any deployment program can be stopped, and would be stopped, if the threat no longer justified the deployment. In FY 71, we are only committing ourselves one new site and continuing work on the two sites authorized last year. Only advanced preparation is being requested for five additional sites. The purpose of the phased Safeguard program is to insure that we commit ourselves only to the level of defense required to meet the threat.



## NATIONAL PROGRAMS PRIORITY

QUESTION: Aren't there other national programs (poverty, environment, education) requiring greater priority on national resources?

ANSWER: No one in the Department of Defense could argue that this nation does not have many high priority problems and that these include poverty, environment and education as well as national security. Indeed, in the past year, the Department of Defense has made vast strides in eliminating projects and activities which could be considered marginally essential to our primary mission of providing for the nation's defense. In the past year, we have reduced our commitments in Vietnam and elsewhere in the world in valid attempts to keep defense spending within the most narrow limits deemed necessary for the security of this nation. As Secretary Laird has stated publicly, "I must bear in mind as Secretary of Defense not only the needs in the field of health, education and welfare and urban affairs, but I also must look at the great challenge this country faces as far as inflation is concerned, and this also affects the national security of our country. These priorities must be weighed very carefully and that's what we're doing through the National Security Council process that has been placed in a formalized position as far as this Administration is concerned." With this in mind, the President, the National Security Council and the Department of Defense weighed all the ramifications involved in the need for such a system as SAFEGUARD and in the move into Phase II of the program. They agreed to recommend to the Congress that this country, for the sake of its security, make such a move. It was done in deep understanding of the special responsibilities the President has for the whole of the nation.

Again, as Secretary Laird has said, "All of the essential facts concerning this matter were analyzed by those of us to whom this responsibility, or a portion of it, has been delegated. Our analyses were made and our judgments reached under the full weight of this responsibility. Accordingly, there was absolutely no place in this equation for expediency -- political, economic or otherwise."

The President has also spoken to the matter of priorities:

"The question, I submit, in defense spending is a very simple one: 'How much is necessary?' The President of the United States is the man charged with making that judgment. After a complete review of our foreign and defense policies, I have submitted requests to the Congress for military appropriations -- some of these are admittedly controversial. These requests represent



the minimum I believe essential for the United States to meet its current and long-range obligations to itself and to the free world. I have asked only for those programs and those expenditures that I believe are necessary to guarantee the security of this country and to honor our obligations. I will bear the responsibility for those judgments. I do not consider my recommendations infallible. But if I have made a mistake, I pray that it is on the side of too much and not too little. If we do too much, it will cost us our money. If we do too little, it may cost us our lives."



## LAUNCH-ON-WARNING

**QUESTION:** Why is a defense of Minuteman necessary when we can launch on warning?

**ANSWER:** A national policy for immediate launch of U.S. offensive missiles in response to an early radar indication of one or a few attacking missiles from another country has been termed a "doomsday machine" or "spasm response." Under any title, it might force a greater nuclear exchange than needed. Those early enemy launches could be accidental or unauthorized. To respond to them with massive retaliation could bring unnecessary destruction or trigger a holocaust.

A defensive system like Safeguard could destroy such enemy missiles and provide time for evaluation and negotiation.

A launch-on-warning policy, one in which the President is forced to make a decision to launch a massive attack against the Soviets or risk losses to the population or even the Minuteman force, would create a very unstable world situation. The Safeguard System should allow the nation to ride out an attack against its retaliatory forces, preserving many crucial minutes for essential presidential deliberation and decision. These minutes could mean the difference between survival and destruction for the nations engaged.



## COMMUNIST CHINESE PENETRATION AIDS

QUESTION: Won't the Communist Chinese be able to defeat the Safeguard area defense by using simple penetration aids?

ANSWER: We know from our own experience that development of effective penetration aids is a very expensive, time-consuming task. Effectiveness must be judged in the context of the defense system against which the penetration aids are to be employed. Relatively simple devices like missile fuel tank fragments have only a limited ability to deceive a sophisticated defense system like Safeguard. The U.S. spent about a decade developing effective penetration aids for our own missiles. Extensive missile range instrumentation and hundreds of highly skilled technical people were required to support our penetration aids program. The Chinese have no such range instrumentation, nor are they likely to be able to build it for many years to come. If the Chinese undertake development of penetration aids to deceive Safeguard radars, they must build large, complex radars with the equivalent of Safeguard radar power to first evaluate their own penetration system. This will not be easy, nor will it happen rapidly.

If we look beyond these obstacles toward a later time when they could develop more sophisticated re-entry system for their ICBMs, the U.S. would still have ways of defending against them. We have a vigorous ABM research and development effort (outside of the Safeguard program) which today is working on ways of extending the useful life of Safeguard against a more sophisticated Communist Chinese threat. Those measures do not involve a thickening of the system in ways which might seem provocative to the Soviet Union.



## CHINESE ICBM TEST

### QUESTION:

When will the Chinese launch their first test ICBM?

### ANSWER:

We believe they will test launch their first ICBM or space booster in a few months.

## U.S. OPTIONS IF USSR CONTINUES BUILDUP

QUESTION: If the Soviets keep deploying the SS-9 at the current rate, would we need to re-base the Minuteman in addition to defending it with the Safeguard in order to insure its survivability?

ANSWER: Secretary of Defense Melvin R. Laird has said: "There are many options available to us, and I don't want to limit this country to just one option. That is one that should be considered if the Soviets continue their strategic offensive missile buildup at that rate. I would not want to limit it just to the Minuteman option that we have available, whether it be mobile or rebasing.

"There are other options that are available, and those tough, hard decisions will have to be made in 1972, and as we prepare our new five-year program. This year I believe we have the time to follow through on the SALT talks and to go with a very minimum program and still protect the security of the United States.

"Those are tough, hard decisions. The Soviet Union is establishing this timetable, and you all know in this building how long it takes for us to project a weapons system--from four to eight years in the future before it actually comes into our inventory--and for planning purposes we have to consider those things. But I wouldn't want to limit our option to just the one that you point out. "\*"

\*SecDef Laird, Press Conference, 24 February  
Washington, D. C.



## USSR SLBM DEPLOYMENT ONLY A DETERRENT

QUESTION: Isn't the Soviet Submarine Launched Ballistic Missile force being deployed as a secure second strike force for deterrence, like the US Polaris/Poseidon force, and not as a first strike force against US bombers and the National Command Authority?

ANSWER: Ocean-launched Soviet SLBMs, because of their short flight times to target, would allow our defenses briefer warning periods than would their long range, land-based ICBMs. We believe SLBMs, therefore, constitute the most effective enemy threat against our bombers and the National Command Authority. In a SLBM attack, the bombers might not have sufficient time to take-off from their bases and the Command Authority time to move to alternate operating headquarters.

It, then, would be highly imprudent for us to assume that SLBMs would only be used against cities in a second strike deterrent role, and not for targets against which they are uniquely effective. This is particularly true in view of the close proximity and short time of flight from our NCA in Washington, D. C., to areas where enemy submarines might operate.

U.S. vs USSR ABM

QUESTION: How would American ABM developments during the past year compare with the Soviet developments?

ANSWER: Secretary of Defense Melvin R. Laird has said:  
"I believe that from the standpoint of the technology of the antiballistic system we are ahead of the Soviet Union. I believe that that is one of the reasons that in all the reports that we received from Helsinki they indicated a great deal of interest in this. I believe that it's one of the most important bargaining tools we have as far as the SALT discussions are concerned."\*

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\* Secretary of Defense M. R. Laird, Press Conference, 24 February, Washington, D. C.



## RELATIONSHIP TO SOVIET ABM

QUESTION: The USSR has abandoned ABM. Why, then, should we continue?

ANSWER: The assertion that the Soviets have abandoned ABM is not true. On the contrary, Secretary of Defense Laird, in testimony before a joint session of the Senate Armed Services and Appropriations Committees on 20 February 1970 summarized the Soviet ABM status as follows:

"During the past year the Soviets appear to have brought a number of the Moscow ABM complexes (ABM-1) to an operational status. Testing of what appears to be an improved GALOSH missile has been noted, and such a missile could be available in the near future. No firm estimate of possible capabilities of this improved missile is available. Research and development related to a new ABM system has also continued.

"For ballistic missile early warning, and initial tracking, the Soviets rely primarily on large phased array dual radars. The Soviets probably have a number of these early warning radars either operating or under construction, and as such are expanding their surveillance coverage to include most of the areas that are of concern to them."

The Secretary of Defense 1970 Defense Report to the Congress added:

"Soviet ballistic missile defense consists of long range radars around the periphery and an ABM system deployed at Moscow. The system at Moscow consists of some 60 launchers designed to fire a long range, high altitude interceptor missile. Deployment at Moscow is nearly complete."

More importantly, however, our proposed Safeguard expansion is not specifically tied to the Soviet ABM effort. Our Modified Safeguard expansion is instead related to the necessity to protect our strategic retaliatory forces against the increasing number of Soviet offensive weapons and to protect our population against the Communist Chinese ICBM threat and against accidental launches from any source.

FIRST SAFEGUARD INTERCEPT

QUESTION: When will the first intercept test with an actual ICBM and the Safeguard in the Pacific take place?

ANSWER: These intercepts will begin in the Fall of 1970.



## SOVIET MIRVS

**QUESTION:** Are the Soviets working toward a Multiple Independently-Targeted Reentry Vehicle (MIRV) capability?

**ANSWER:** For some time, the Soviets have been testing a three-warhead version of the SS-9. It is not quite clear at this time whether this is a multiple warhead system capable of targeting separate targets (a MIRV system) or not. However, the intelligence community agrees that regardless of the objectives of the present test series the Soviets are likely to develop MIRVs within the next few years.

## THE SIGNIFICANCE OF A SMALL COMMUNIST CHINESE ICBM FORCE

QUESTION: The Communist Chinese, even if they develop a limited ICBM force in the 1970s, will not pose a major threat to the US because of our greatly superior capabilities. Why then, should we deploy an ABM to meet it.

ANSWER: The President provided the answer to that question during his news conference on 30 January when he stated:

"Ten years from now, the Communist Chinese, for example, among others, may have a significant nuclear capability. They will not be a major nuclear power, but they will have a significant nuclear capability.

"By that time the war in Vietnam will be over. By that time, I would trust also, the Laotian war may be resolved.

"But, on the other hand, with a significant nuclear capability, assuming that we have not made a breakthrough -- and we're going to try to make the breakthrough in some normalization of our relationships with Communist China -- then it will be very important for the United States to have some kind of defense so that nuclear blackmail could not be used against those nations like the Philippines, with which the United States is allied in the Pacific, not to mention Japan."

In addition, only a few ICBMs, such as the Chinese might possess in a few years, could kill millions of Americans, if the nuclear warheads hit even a few large undefended U.S. cities. Without a defense against the Chinese threat, their mere possession of the capability to take millions of U.S. lives could limit our response to their aggressive moves.



## NEED FOR DEFENSE FROM COMMUNIST CHINA

QUESTION: Isn't it true that even to the Chinese it would be utterly insane to attack the U.S.? Why then do we need a defense against the Communist Chinese?

ANSWER: The alternative to deploying an active area defense of the United States is to rely on the deterrent power of our strategic offensive forces, just as we do against the far larger Soviet threat to our cities. However, in considering this alternative, we must keep clearly in mind a number of interrelated factors--demographic, technical, economic, social, and political.

First, we must recognize the major demographic differences between the Soviet Union and Communist China, specifically the population distribution statistics. The thousand largest Chinese cities account for only 11 percent of the total population, compared with 47 percent for the Soviet Union and 63 percent for the United States. Thus, the thousand largest Chinese cities contain considerably less than one-third, one-fourth, or one-fifth of the population that has been postulated at various times as the level required for "Assured Destruction" of the Soviet Union--the measure of our ability to inflict enough retaliatory damage on them to deter them from attacking us first.

The fact that a large proportion of Chinese industrial capacity is concentrated in a relatively small number of cities has some bearing on the problem of deterrence. But, more notably, China is predominantly a rural society where the great majority of the people live off the land and are dependent only to a limited extent on urban industry for their survival. Furthermore, as Mao Tse-tung is reported to have said, China with its huge population (now estimated at 800 million) could survive (i.e., as a people but not as a 20th century nation) even with a loss of hundreds of millions of lives in a nuclear attack. We know from past experience that the Asian Communists are tenacious opponents and are willing to take great losses of life in achieving their objectives. Therefore, it is reasonable to conclude that our ability to deter Communist China with our strategic offensive forces is considerably less certain than in the case of the Soviet Union.

Second, because our population is heavily concentrated in a relatively few large cities (42 percent in the largest 50 cities compared with 6.8 percent for Communist China), we would be highly vulnerable to an attack by even a relatively few Chinese ICBMs - if we had no defense against them. If deterrence should not work, our only recourse would be retaliation. However, we would have to



withhold a large part of our strategic offensive forces as a deterrent to the Soviet Union, and the fatalities that we could inflict on Communist China would be relatively small in proportion to its total population. We could, however, destroy most of their urban industry/population with a relatively small number of weapons.

Third, given the character of the present regime in China, their ambitions in Asia, and their long-time hostility towards the United States, it would be extremely risky on our part to rely on deterrence only -- if we had any better alternative. The President of the United States has stated, "Ten years from now the Chinese Communists may have a significant nuclear capability. Assuming we have not made a breakthrough in some normalization with our relationships with Communist China, it will be very important for the United States to have some kind of defense so that nuclear blackmail could not be used against the United States or against these nations like the Philippines with whom the United States is allied in the Pacific." Our cities would be hostage to the Chinese ICBM force, and the President might have no other alternative but to back down or risk the destruction of several major U.S. cities and the death of millions of Americans.

Thus, the issue resolves itself into a matter of judgment. If one believes that a Communist China armed with a force of ICBMs could still be deterred by our overwhelmingly greater strategic offensive forces, then an ABM defense need not be deployed against that threat. If, however, one believes that the Chinese leaders might not be deterred, then the Safeguard system would be well worth its cost for this purpose alone. In view of the fact that we can provide the option for timely protection at a reasonable cost, along with protection from Soviet threats, it is only prudent to do so. It is the responsibility of the Department of Defense to provide the nation with the ability to be defended in such cases. It is the responsibility of the Congress to examine the threats and our recommendations and to determine a course of action.



## CHINESE THREAT SLIP

**QUESTION:** You say that the Chinese threat has slipped one year. What now is the reason for initiating Phase II?

**ANSWER:** Although the Chinese threat is judged to have slipped somewhat, intelligence estimates indicate they could have an early capability by the mid-1970's, on or before the time we could complete our full Safeguard deployment.

## CHINESE LAUNCH FACILITIES

QUESTION:      What is the status of the Chinese ICBM launch facility?

ANSWER:      Dr. John S. Foster, Director of Defense Research and Engineering, has said, ". . . during the last year the Chinese Communists have been tearing up their ICBM launch facility and rebuilding it, and have now reached the point where they appear ready to conduct ICBM launches. On that basis, we would expect that it would be possible for the Chinese Communists to launch their first ICBM as early as within the next few months."\*

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\*Dr. John Foster, press conference, 24 February, Washington, D. C.



## SYMPATHETIC FUSING

QUESTION: Won't "sympathetic fusing" of incoming warheads negate the defense and cause unacceptable damage?

ANSWER: A "sympathetic fuse" is a device attached to an incoming warhead which would, in theory, detonate the warhead if and when the warhead was attacked. It would be designed to be set off by a relatively nearby nuclear burst from a defensive missile.

Its proponents claim that the defense could not then nullify damage even by a successful intercept because the exploding incoming warhead would still cause damage on the ground.

It is obvious that the use of such a device would prevent the attacker from selecting an "optimum" burst altitude to do maximum damage to his target and, by this reasoning, the defense would have already forced the offense to pay a penalty in lowered effectiveness. More importantly, however, the lower reliability caused by inclusion of the fusing device and the opportunity afforded the defense to explode the incoming warheads at relatively harmless ranges makes it exceedingly unattractive to the offense.

## ABM EXPLOSION EFFECTS

QUESTION: Isn't there inherent danger to our own population in exploding anti-ballistic missiles over U.S. territory?

ANSWER: The effects of an exploding nuclear weapon can be broadly classified as blast, thermal radiation (heat), and nuclear radiation. As far as blast is concerned, because the Spartan detonation occurs high above the atmosphere, there will be little effect; so little that it can be considered negligible, even at the minimum Spartan allowed burst altitudes. For the Sprint burst within the atmosphere, the effect would be similar to a sonic boom, but there would be no hazardous blast.

Thermal radiation for a Spartan burst on a clear day would cause no hazard to a person even in the open. At minimum allowable altitude only a mild sunburn-like reaction could be caused to bare skin. Thermal effect from Sprint would be even less. Only if a person were outside and was looking directly toward the point of burst, might he suffer some vision impairment. However, for serious eye damage to occur, the explosion would have to be at a much lower altitude than is contemplated for either Sprint or Spartan.

Direct nuclear radiation on the ground from either Sprint or Spartan would be negligible. From the detonation very little nuclear debris is produced. In the ensuing months and years this radioactivity would gradually settle down to earth, worldwide. This would be a gradual process, however, similar to that which we have experienced with the fallout from atmospheric tests. Almost all of the debris from these tests, which were terminated by the U.S. and the Soviet Union in 1962, remained suspended in the upper atmosphere for many years, while its radioactivity was greatest. Many of the isotopes of short "half life" have decayed almost completely before settling to earth.

In summary, there would be no significant hazard to people and property on the ground in the event this system has to be used.



## SAFETY AND NUCLEAR ACCIDENTS

QUESTION: What are the safety implications of living in an area where nuclear weapons are stored?

ANSWER: Very stringent precautions are taken to protect the public against any hazard from the conventional explosives and propellant systems which are similar to those in many other weapons and non-defense industrial applications throughout the country.

Nuclear weapon storage on Safeguard sites will be in steel and concrete underground launch cells. The missile warheads are at all times unarmed when in launch cells and cannot be armed until they have reached a safe altitude. These warheads, as well as all other U. S. nuclear weapons, are designed by highly competent technical designers and safety specialists with a series of safety devices so the likelihood of a nuclear detonation in case of an accident is essentially nil. In addition, equally competent specialists representing the military services and their contractors, the Defense Atomic Support Agency, and the Atomic Energy Commission's field offices and laboratories actively participate in formal design reviews and safety analyses during system development.

No nuclear warheads are released to the DOD by the AEC until they have been tested and certified to meet the very rigid nuclear safety criteria for use in the particular military weapon systems for which they have been designed. These tests provide assurance that, in the event of an accidental detonation of the conventional high explosives used in a nuclear weapon, no nuclear detonation will result. The success of the U. S. nuclear weapon system's safety program is demonstrated by our safety record during more than two decades of nuclear weapon production, transportation, storage, and operations: we have never had an accidental nuclear detonation.



## POSSIBILITY OF ACCIDENTAL NUCLEAR EXPLOSION

QUESTION: Generally speaking, Safeguard sites, as compared to the previous Sentinel deployment, are located away from cities. Does this mean there is a hazard incident to having such weapons near cities?

ANSWER: No. Our weapons and our operating procedures are so designed by highly competent technical designers and safety specialists that the chance of any accidental nuclear explosion is essentially nil. We have never in all the years nuclear weapons have been deployed worldwide, had an accidental nuclear detonation of any nuclear weapon. You will recall that when four such weapons fell some 30,000 feet after an aircraft collision over Spain there were no nuclear explosions. In addition to the nuclear safety provided, very stringent precautions are taken to protect the public against any hazard from the conventional explosives and propellant systems which are similar to those in many other weapons and industrial applications.

There have been objections by some cities to having the sites close by. With one exception, Washington, D. C., the location of the National Command Authority, the Safeguard objectives can be met without having sites close to cities. It thus appears desirable to seek sites further from the major cities than was possible during the planned Sentinel deployment.



## RADAR ATTACK

QUESTION: Are not the radars of the Safeguard system especially vulnerable to attack? Of course loss of the radar means the whole system collapses.

ANSWER: Because there are few radars relative to the number of missile sites in our Safeguard system the safety of these radars from a potential attack has been considered in the design of the Safeguard system. The three basic types of attacks on our radar sites would be:

1. Blinding the radar by exploding nuclear weapons in appropriate locations.
2. "Leak-through" of enemy re-entry vehicles through our defenses.
3. Exhaustion of our interceptor stocks.

1. Radar Blinding. Over the past several years, extensive analyses have been made of the effect on the ABM radar of (1) self-blackout (caused by our own Spartan intercepts), (2) precursor blackout (caused by deliberate enemy bursts at high altitude), and (3) of weapon debris that escapes from the burst region after very high altitude detonations. On the basis of the studies, we conclude the following:

A. Self-Blackout. The fully deployed Safeguard system would not be seriously limited by self-blackout effects, during attacks up to the maximum postulated Chinese Communist threat level as long as proper decisions are made concerning intercept doctrine, data processing performance and number of radar faces. The same conclusion is true for the estimated heavier attack against the defended Minuteman force. This is because we would primarily use the low yield Sprint whose blackout effect on the defense is minimal. Successful radar operation in the nuclear environment requires that the system software be capable of utilizing interrupted track data, which it is.

B. Precursor planning must first take into consideration the operational difficulty in mounting such an attack. Since the success of a precursor attack depends on getting a series of re-entry vehicles over the Safeguard radars in a critical timing sequence, the enemy planner must program his force to give him a high probability of achieving this sequence without "holes." Studies show that, to achieve a high expectation of a successful precursor attack on one target, an enemy planner would have



to devote a great many warheads to this attempt. This is especially true because he must allow for failures of his own missiles if he is to be reasonably sure of maintaining the blackout. The numbers of re-entry vehicles required for precursor attacks will be well beyond the expected size of the Chinese ICBM force for some years to come. In the case of a Soviet submarine-launched precursor attack, the number of their missiles required would seriously degrade their attack strength against other targets. For example, the time required to complete the precursor attack would enable many SAC aircraft to clear the landing fields. The Minuteman defense against a Soviet attack is primarily based on the Sprint missile backup to the Spartan which, with the Missile Site Radar (MSR), will perform adequately in spite of interrupted Perimeter Acquisition Radar (PAR) data during the engagement. The high acceleration Sprint interceptor can be held until the re-entry vehicle enters the atmosphere. Because the MSR utilizes a higher frequency than the PAR, the blackout problem is drastically reduced.

C. Weapon debris is taken into consideration by the sophistication of the radars.

2. Leak-Through. The leak-through attack assumes that our defense interceptor is imperfect and that the attacker knows the level of imperfection. In other words, for each attacking enemy re-entry vehicle, there is some probability, though very small, that the re-entry vehicle will not be killed. Thus, if enough re-entry vehicles are directed against the radar, then, statistically, one or more re-entry vehicles will leak through. In the Safeguard deployment, the radars are actually one of the best defended facilities in the country. If necessary, a second interceptor can be fired to replace almost any failed interceptor early enough so that the re-entry vehicle will not get through. Thus, because we can reprogram our interceptors, the enemy must attack in large numbers to have any confidence of knocking out the radar. The warheads he uses to attack radars subtract from the number he has available to use against the silos. If he misestimates and does not destroy the radar then all the re-entry vehicles may have been expended without defeating the defense.

3. Exhaustion. The exhaustion attack merely sends enough re-entry vehicles at the defense so that all the defense interceptors are used up. At this point, the attacker directs his remaining re-entry vehicles against the missile silos. While this attack is a relatively high confidence scheme, the defender wins the engagement. The defense has forced an attrition of the attack force which, of course, is one of the defense goals. And, the defense has bought crucial time for SAC bombers to become safely airborne and MINUTEMEN to be launched. Thus, our deterrence remains effective.



Of course, should Soviet offensive strength continue to grow and grow, we would ultimately have to take new offensive steps of our own, presenting more targets for the enemy warheads to cover.

As Secretary Laird has said, we desire not to take such offensive steps now -- until we know the likely outcome of Strategic Arms Limitation Talks.

## PRESIDENTIAL DECISION DELAYS

QUESTION: Could Presidential decision delays prevent SAFEGUARD use against accidental launches as well as deliberate attacks?

ANSWER: Provision for timely and positive employment of SAFEGUARD has been the major objective for the design of the system and its command and control complex. Employment of the SAFEGUARD System requires specific human decisions and positive actions are required before a missile from the SAFEGUARD System can be launched or detonated. Similar provisions are in effect with our other nuclear weapons systems. Many years of experience and many and frequent tests and exercises have demonstrated conclusively that we can have positive control of our nuclear weapons systems without hindering their responsiveness or their reliable performance. SAFEGUARD is being specifically engineered to assure complete and near instantaneous exchange of data with National Command authorities. Considering that the network connecting the President and key Command Centers is provided with all such attack information, and that only defensive actions are involved, the time required for a decision to employ SAFEGUARD should be extremely short. Such a strictly defensive action decision would not necessarily have to await exact details on the size and purpose of the attack. Only the President may authorize the use of nuclear weapons. The detailed procedures by which Presidential authority is exercised cannot be discussed publicly for security reasons.



## BETTER DEFENSE OF MINUTEMAN

QUESTION: Aren't there better defenses for Minuteman?

ANSWER: During our review of current options we also considered, but did not recommend, the deployment of additional forms of ballistic missile defense. Those included a dual-purpose (offensive and defensive) Minuteman system, mobile offensive missile systems and offensive and defensive missile systems based closer, on land and sea, to their potential targets. Safeguard is the only strategic defensive system which is multipurpose since, with one set of components, it can defend our strategic forces (Minuteman and bombers) and also partially defend our population against Chinese ICBM's as well as accidental launches from any source. Should the Soviet threat to Minuteman become larger than Safeguard is designed to counter, we would then have to make further decisions to protect our deterrent.

We seek through the FY 1971 Safeguard program to avoid this year hard decisions on new offensive systems until we can better judge the possible results of Strategic Arms Limitation Talks.

## POPULATION VULNERABILITY

**QUESTION:** Heavy defense is provided only for the President. Won't the rest of the population be vulnerable to attack?

**ANSWER:** Any decision to install Safeguard around the Washington, D. C., area is a decision to protect the National Command Authority, not the President of the United States, per se. In case of any type of enemy attack, it is important that the Command Authority remain operative as long as possible. Consistent with the President's constitutional role as Commander-in-Chief, only he may authorize the use of nuclear weapons. While the detailed procedures by which his authority is exercised are classified, it is obvious that the President and the facilities he utilizes to exercise this judgment should be protected. In a related manner, the same is true for the many other federal authorities which would be called into action in the case of an attack by nuclear weapons.

(As previously stated, faster-than expected growth of the fleet of Soviet Polaris-like, Y-class submarines is of particular concern because of Washington's vulnerability to SLBM attack. A Sprint defense would be needed to defend against such an attack.)



## CONGRESSIONAL ACTION

QUESTION: Does DoD expect a rerun of last year's Senate debate and close vote?

ANSWER: Secretary of Defense Melvin R. Laird has said:  
"I understand the difficulties that face the Congress, that face the Executive Branch of the Government, in meeting the high priority needs that this country must meet both at home and abroad.

"I believe that that is one of the reasons that the Department of Defense has taken the leadership in showing ways to reduce overall defense expenditures.

"As you know, we have gone from 8.6 percent of the gross national product of this country down to 7 percent of the gross national product that's being expended on defense in this budget.

"We are going forward with massive base reductions and force reductions at some 100 or so bases, well over 100 bases, in the United States. We are doing this on the basis of meeting the priorities that exist within Government.

"I understand full well the problems that the Congress has in this field. It's the same problem that the Executive Branch has. But I do believe that in view of the fact that we are in a bargaining position in going forward with the SALT talks this year, that the Congress will take the position of supporting the decisions of the President of the United States in this very difficult national security area. This is particularly true in view of the fact that the Soviet Union is moving forward so rapidly. It also is true in view of the statements that are being made by my counterpart in the Soviet Union. I hope that you will take advantage of reading some of those statements about their ABM program, about their strategic missile offensive system, and the manner in which they are pushing forward.

"As a defense planner, I can't go entirely by what we might like to have happen. We have to face the hard, tough realities that exist as far as the overall security of this country is concerned. I believe the Congress will face up to those same responsibilities and will go forward with this modified program to expend less than \$100 million, less than \$100 million, in this Fiscal Year 1971 on this program as recommended by the President. "\*  
\*SecDef Laird, Press Conference, 24 February  
Washington, D. C.



## SCIENTIFIC OPINION

QUESTION: Don't most knowledgeable scientists state that the SAFEGUARD System will not work or will be ineffective?

ANSWER: It is true that many scientists have opposed the deployment of SAFEGUARD for various reasons. Some scientists have done so on political grounds, expressing the fear that the system would cause further escalation of the U. S. -Soviet nuclear arms race. Some opposition was based on the assertion that SAFEGUARD would not be effective because of technical deficiencies.

The clearly stated objectives of SAFEGUARD should not provoke nuclear arms escalation. The SAFEGUARD deployment does not generally locate defense radars and missiles near large population centers, thus does not degrade the Soviet's ability to inflict great damage on our cities. The defense of MINUTEMAN is no cause for Soviet concern unless they intend a first strike.

The very extensive research and development test program on SAFEGUARD components has already given high assurance that the system will work.

The SPRINT and SPARTAN missiles are being tested at White Sands Missile Range and Kwajalein Missile Range. Both of these interceptors have demonstrated a performance which provides the necessary confidence in their reliability.

The AEC has carried forward its warhead testing program for these missiles and has achieved excellent results.

The Missile Site Radar (MSR) is installed at Kwajalein and meeting its performance objectives. All four processors have been installed and are operating with the MSR at Kwajalein.

The Perimeter Acquisition Radar (PAR) is a state-of-the-art phased array radar. Similar radars have been built and successfully operated (e.g., the FPS-85 radar at Eglin Air Force Base in Florida). Although the PAR will not be built at Kwajalein, we will be able to track incoming re-entry vehicles with a PAR-like radar and transfer targets to the MSR in simulation of the PAR operation.



Thus, all problems relating to component design have largely been solved. The state-of-the-art is such that all technical areas have been developed to the point where the remaining effort is largely a matter of production engineering. However, some refinement of subcomponents may be necessary as the current test program progresses which will increase reliability and accuracy of the system.

Thus, those responsible for developing and deploying the SAFEGUARD System are confident it will be effective in meeting its objectives.

## SAFEGUARD AS A THREAT TO SOVIET DETERRENT

QUESTION: In combination with U.S. strategic offensive forces will the Soviets perceived Safeguard as a threat to their deterrent?

ANSWER: The objectives of the Safeguard deployment have been made very clear by President Nixon. They are:

"1. Protection of our land-based retaliatory forces against a direct attack by the Soviet Union;

"2. Defense of the American people against the kind of nuclear attack which Communist China is likely to be able to mount within the decade;

"3. Protection against the possibility of accidental attacks from any source."

None of these objectives threaten the Soviet deterrent. The type of deployment, those in Minuteman fields or at the other planned locations, shows beyond doubt that defense of our cities against a massive Soviet attack is not an objective of Safeguard. Consequently the Soviet deterrent is unaffected.



## SAFEGUARD GROWTH POTENTIAL

QUESTION: What is proposed if the Soviet threat keeps expanding?  
Will Safeguard be proliferated into a larger and larger system?

ANSWER: The use of Safeguard to defend Minuteman has been chosen for several reasons. As long as the Soviet threat does not continue to grow to massive proportions, the Safeguard defense will assure the survival of sufficient Minuteman silos to maintain our deterrence. In addition, the Safeguard batteries in the Minuteman fields would also provide a portion of a needed area defense of the entire country from Soviet SLBMs and defense of our cities against Chinese ICBMs should those threats build. Safeguard can also serve as a core for growth options in defense of Minuteman, if required.

If, in the future the threat is such that the defense of Minuteman has to be expanded, new and smaller additional radars placed in Minuteman fields would be less costly than the Safeguard Missile Site Radar (MSR) because they would not have to cover such large areas. We will pursue a program to determine the optimum radar for such a defense and begin the development of this radar and associated components in FY 1971. At the same time, the Air Force will pursue several other options for solving the survivability problem of the land-based offensive missile system. These will include several concepts involving the Minuteman missile on transporters. A system in which the missile can be moved rapidly into one of many hard shelters--the shelter-based Minuteman--might be developed.

The Air Force will also continue to examine the value of increasing the hardness of the silos in which Minuteman is now based or could be based. These are research and development programs only in the FY 1971 budget.

Those and other concepts, however, also have shortcomings. For example, hard rock silos might compare favorably with Safeguard when enemy missiles are not very accurate, but they become increasingly less effective as accuracy is improved. Safeguard defense capability, however, is not affected by enemy accuracy. Similarly, mobility effectiveness is dependent on enemy intelligence capability. It may be that some combination of survival measures is best. In any event, Safeguard is the only strategic system which is multi-purpose since it will defend our strategic forces and also our population against Chinese ICBM's and against accidental launch from any source. It is the only alternative which provides population defense.



There are, then, several options. The Safeguard defense will serve as a nucleus. We could add a hardpoint defense system if necessary or we may later choose to deploy part of the force in a different basing concept than the present force. Proceeding with further deployment of Safeguard in FY 1971 postpones the necessity of committing ourselves now either to a mobile Minuteman (on land or afloat) or to further hardening of Minuteman silos.

However, should the Soviet threat continue to grow beyond levels that can be reasonably handled by active defense, then we would be forced to consider systems such as ULMS, the Undersea Launched Long Range Missile System.



### THREE DETERRENT FORCES

QUESTION: Any one of our three nuclear deterrent forces is adequate to destroy the USSR. Why is it necessary to provide for the survival of all three?

ANSWER: The three deterrent forces, Intercontinental Ballistic Missiles (ICBMs), Submarine Launched Ballistic Missiles (SLBMs) and Strategic Air Command bombers rely on different means of surviving enemy attacks. Those means of survival are, in order, hardness, concealment and mobility. They greatly complicate the tasks of an attacker contemplating a first strike at the United States and, thus, we need all three forces.

If we depended on only two deterrents, a technological breakthrough by an enemy would leave us with only one viable force. Any impairment of that single force could be disastrous.

If we immediately went to only one deterrent force, for example retaining our SLBMs and abandoning our Minuteman and bomber forces, we lay ourselves open to a possible technical breakthrough in anti-submarine warfare by an enemy. This could render our submarine fleet ineffective and could leave the United States with no nuclear deterrent.

Similar comparisons are possible if we rely on either of the other two forces as a single deterrent. The presence of three rather than one strategic offensive force helps guarantee our deterrence.

### PROGRAM COST ESTIMATES

QUESTION: What are the costs for the Phase I and Modified Phase II?

ANSWER:

## 1. Phase I Program

FY 70 funds (authorized and appropriated)	\$ 858 M
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DoD acquisition . . . . .	4.462 B
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AEC warhead . . . . .	9	B
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Est. Phase I program . . . . .	5.362 B
	(1969 dollars)

Est. Annual operating costs . . . . .	100 M
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Indirect costs budgeted elsewhere

## 2. Continued Phase I and Modified Phase II Program

FY 71 fund request (authorized and appropriated) . . . . .	1.45	B
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(FY 71 Phase II expenditures less than 100M)

Est. DoD acquisition	5.9	B
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Est. AEC warhead . . . . .	9	B
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Est. Phase I and Modified Phase II program . . . . .	6.8	B
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(1969 dollars)

Annual operating costs . . . . .	150 M
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Indirect costs budgeted elsewhere

3. Entire 12-Site Program --If Requested and Authorized

DoD acquisition . . . . .	10.7	B
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AEC warhead . . . . .	1.2	B
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(1968 dollars 10.3)	11.9	B
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(1969 dollars)

Annual operating costs . . . . .	350 M
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Indirect costs budgeted elsewhere

Indirect costs are those for varied DoD and Army-wide activities, such as the cost of operating missile test ranges, military housing, and the operation of training centers, headquarters, and the like.



## STATUS OF SAFEGUARD FUNDS FOR PHASE I AND PHASE II

QUESTION: Of the estimated \$4.5 B total DoD acquisition costs for Phase I, what money has been appropriated and approved, obligated, and expended? For Phase II?

ANSWER: DoD acquisition costs include Research, Development, Test and Evaluation, Procurement of Equipment and Missiles and Military Construction for the period FY 68 through completion of the deployment in early Calendar Year 1975. There have been appropriated and approved for the program to date \$2.261 B, of which \$1.755 B has been obligated and \$1.045 B expended through 31 January 1970.

DoD has requested Congress to authorize and appropriate \$1.45 billion in FY 71 to proceed with Modified Phase II. If approved, the Phase I and Modified Phase II acquisition costs -- completion costs for 3 sites -- are estimated at \$5.9 billion. The Administration has requested nothing beyond this.

(Note: The above figures do not include annual operating costs and military personnel pay. The operating cost and military personnel pay for this same period include \$85 M, appropriated and approved, \$69 M obligated, and \$62 M expended through 31 January 1970.)

## COST GROWTHS TO DATE

QUESTION: What cost growths have you experienced?

ANSWER: The acquisition cost growth of the two-site deployment was provided to the Congress in December 1969. At that time, Congress was informed that the total acquisition cost of the Phase I deployment had increased \$277 M or about 6-2/3 percent, from \$4.185 B to \$4.462 B. Of this total, \$136 M was due to price level inflation which occurred between December 1968 and December 1969; \$55 M was due to stretch-out of the time until deployment can be completed (requiring longer retention of the production base); and \$86 M was due to design changes and refinement of cost estimates.

Should the full 12-site deployment be authorized, the total DoD acquisition cost would be about \$10.7 B (at December 1969 price levels) as compared with the \$9.1 B (at December 1968 price levels) estimate reported to Congress last year. The increase of \$1.6 B is due to several causes: the inflation in price levels that occurred between December 1968 and December 1969, a stretchout in the time until deployment can be completed, certain design changes found necessary during the year, and more detailed estimates for the work earlier contemplated. Of the total increase, \$395 M or 4 percent is due to inflation, \$575 M or 6 percent is due to the longer period of deployment, \$650 M or 7 percent is due to design changes and to more detailed estimates.



## CONTRACTOR EMPLOYEES

QUESTION: How many contractor people are employed in support of the Safeguard system?

ANSWER: Currently there are approximately 7300 persons in the organizations of the System prime contractor and 1st tier subcontractors who are engaged in production activities necessary to the deployment. Additionally, there are approximately 9400 persons engaged by the System prime contractor and 1st tier subcontractors in the research and development activities. Employees of the firms engaged in construction engineering activities number approximately 750. Thus, it is estimated that the numbers of persons currently on the payrolls of the contractor and 1st tier subcontractors total approximately 17,450.

## DIRECT GOVERNMENT EMPLOYEES

**QUESTION:** How many Government employees does SAFEGUARD have?

**ANSWER:** As of 31 Dec 69, the Government personnel directly participating in the SAFEGUARD Program were: 940 military, 2174 civilian; total 3114.



## CONSTRUCTION DELAYS

QUESTION: Will there be additional construction delays?

ANSWER: None are anticipated. However, in a complex construction program, delays could occur for a number of reasons; for example -- strikes or jurisdictional disputes, worse-than-average weather, appeal of contract award by losing bidder(s), on other unexpected conditions.

## NON-LINEARITY OF COSTS

**QUESTION:** Explain why total program costs and annual operating costs do not increase in a linear manner.

**ANSWER:** To initiate and operate any program requires a minimum of civilian and military personnel and services to plan, supervise and support the effort. In the case of Safeguard, such organizations as the Safeguard System Command, Safeguard System Evaluation Agency, Safeguard System Office, Safeguard Central Training Facility, Safeguard Logistics Command, and U. S. Army Air Defense Command Headquarters will be required whatever may be the number of sites in the deployment. The establishment of these organizations is dependent on the existence of the program and does not vary directly with the number of sites. As the buildup progresses, the size of the military and civilian complement and their necessary services increases and the maintenance builds up. The peak is reached at about Equipment Readiness Date (ERD) of the last site when all operating/maintaining personnel are aboard, while deploying staffs are still in existence. Thereafter, the operating costs decrease slowly as the program settles into one of operating and maintenance only.

In addition, items produced for the first time cost more than assembly line produced items made in quantity. The first costs of any venture always are higher than the follow-on products.



## AEC COSTS FOR MODIFIED SPARTAN WARHEAD

QUESTION: What are the estimated AEC costs for the Modified Spartan warhead?

ANSWER: According to the AEC, the best estimate available at this time is a total cost ranging from \$200 million to \$500 million for Modified Spartan nuclear warheads. This estimate provides for the research, development, test and production of sufficient Improved Spartan nuclear warheads to meet the requirements for a full Phase II deployment. The AEC has under consideration a number of candidate designs which accounts for the wide range in the cost estimate, and until a design is selected, they will not yet have a good basis for a firm cost estimate. Design studies which could serve as a basis for a good cost estimate will be completed in about six months or more.

## FISCAL CONSTRAINTS

Question: Deployment of SAFEGUARD is stated to be a matter of national urgency. Aren't DoD fiscal constraints delaying completion of deployment?

Answer: Constraints in the expenditure of funds by the Department of Defense are real and have an effect on many programs considered important by the Department -- including both military and civilian leaders. Secretary Laird has commented, "I would be less than frank with you if I told you reductions in the defense budget do not affect the national security posture of this country. The reductions that I have approved and recommended to the President have been based upon those actions that would least affect the defense posture and the national security of our country." That statement is especially true in the case of SAFEGUARD.

But, it is essential to remember that SAFEGUARD is intended for a threat that is evolving now for the mid-to-late 1970s. In that fact stands the basic wisdom of President Nixon's approach to Anti-Ballistic Missile Defense. Even with budget constraints, the President's intention to develop a "phased" system which will be reviewed each year in the light of changes in the threat, the progress in arms limitation talks and improvements in technology will allow the best possible defense to be provided for the least possible money. Minimal funding will be requested each year in the light of the points mentioned above.

According to present intelligence estimates and progress on the Phase I SAFEGUARD program now underway, this approach will provide the United States with adequate and timely defense as outlined by the President and the Secretary of Defense. As the President explained in his initial statement on the system:

"It is a safeguard against any attack by the Chinese Communists that we can foresee over the next ten years.

"It is a safeguard of our deterrent system, which is increasingly vulnerable due to the advances that have been made by the Soviet Union since the year 1967 when the Sentinel program was first laid out.

"It is a safeguard also against any irrational or accidental attack that might occur of less than massive magnitude which might be launched from the Soviet Union."



## ADVANCED PREPARATION vs AUTHORIZATION

**QUESTION:** How does authorization of advanced preparation work differ from authorization for deployment?

**ANSWER:** Authorization of "advanced preparation work" permits such activities as site survey and engineering, land acquisition and purchase of some long lead-time items in anticipation of later authorization to install a site. Authorization for deployment of a site, on the other hand, constitutes the basis for proceeding with all construction, procurement, and installation of equipment necessary for the complete site. Without Congressional authorization for advanced preparation, there could be a question as to whether funds should be expended, before Presidential decision to deploy, for such pre-construction activities as engineering and land acquisition. Questions might also arise relative to the procurement of long lead-time items beyond those required for fully approved sites. If such activities were delayed until final deployment authorization of a site, the readiness of the site could be delayed at least a year after the readiness date if all these measures had been permitted to proceed earlier. Upon authorization to deploy, we would be in a better position to avoid a delay of Equipment Readiness Date (ERD), the time when Safeguard will be in operational status.

## ADVANCED PREPARATION WORK

QUESTION: (1) What exactly is meant by "advanced preparatory work" on the five additional sites?

(2) What "advanced procurement" of long lead-time items is planned?

ANSWER: (1) Advanced preparation work includes such activities as site survey and engineering, land acquisition and advanced procurement of long lead-time items to avoid delay in undertaking production and construction for the site should it be authorized for deployment in the following year. Without authority to undertake such advanced preparation work, deployment of a site would be delayed up to 12 months.

When the Safeguard funds are authorized and appropriated by Congress it is expected that approximately \$25 M PEMA will be obligated in FY 71 for advance procurement. No new funds will be required in FY 71 for land acquisition. Less than \$.5 M of prior authorized and appropriated funds will be used for acquisition of some of these sites in the FY 71 timeframe.

(2) It is expected that long lead-time components, including contractor furnished equipment, for the radars and data processors for the 4th, 5th, and 6th sites will be procured in FY 71.



WILL EVENTUAL PROGRAM REACH \$20-50 B?

QUESTION: If estimates went up \$1.6 B in one year, won't we eventually reach \$20-50 B as some have charged?

ANSWER: It certainly is not expected that costs of this program will double or triple from the current base. There probably will be increased costs due to inflation, perhaps to program stretch-out. Both of these factors can be helped to a certain extent, however, by avoiding delays in deployment of the system. Since both inflation and stretch-out relate to longer development time periods, and were nearly \$1.0 B of the \$1.6 B increase over the past year, the avoidance of future delays will assist in controlling costs of this system. The Department of Defense will continue positive action to keep the program under strict fiscal control.

As Deputy Secretary of Defense David Packard recently said to the Congress: "I want to tell these committees very frankly that if such factors as inflation, stretch-out and design improvements occur in future years as they did in the past year then we could experience some continuing cost growth for this defense. I am confident the Safeguard program is well managed, and I will regularly advise Congress of its progress and of my best cost estimates for it, conducting the program on the most economical basis consistent with national security, and consistent with the President's decision that we do only the minimum necessary when it is necessary."

## POSSIBILITY OF SAFEGUARD OBSOLESCENCE

QUESTION: With the current projections of technological advances, how long will it be until the Safeguard System is obsolescent?

ANSWER: The matter of technological obsolescence has been carefully explored. The radar-guided missile intercept concept, which the Safeguard System employs, is the latest and best technology presently available in the field of ballistic missile defense. No other technology in the near future promises any better system. With improved terminal guidance, we might be able to substitute non-nuclear for nuclear warheads. We are pursuing this research in that area, but the concept is yet to be proven feasible.

We have also investigated the use of lasers for ballistic missile defense, but they too are in the future as ABM weapons. And even with lasers, radars would still be required. A number of other advanced technological concepts have been explored, but none appear to be practical within the required 1970s-early 80s timeframe.

However, if a defense is static and not allowed to improve either in numbers or technology, it can eventually be countered. Safeguard is not static and technical improvements can be made. The U.S. is currently spending approximately \$150 million per year in research and development on advanced ABM technology to counter enemy improvements and counter-measures as it becomes necessary.

With reasonable technical improvements, Safeguard should not be obsolete as long as missile defense is performed by interceptors and radars.



## OPTIMUM RADAR

QUESTION: Mr. Laird said that DOD will pursue research and development program to determine the optimum radar for Safeguard. Does this mean that the MSR is not satisfactory?

ANSWER: The Missile Site Radar (MSR) is designed to be the radar necessary for each of the 12 sites of a complete Phase II system. This includes the function of defense against SLBMs and against the Chinese threat to our cities. Therefore, one MSR is required at each of the 12 sites, including one at each of the four Minuteman fields.

However, should we decide later that Minuteman defense must be increased because of an ever-increasing Soviet threat, then we could augment the basic Safeguard defense of Minuteman with a smaller and cheaper new radar. The less expensive radar, although less capable than the MSR, could be deployed in the Minuteman fields to improve the defense system. Hence, we are taking the prudent step of conducting R&D for a more optimum "hard site defense only" radar, so that we will be ready if such an augmentation of Minuteman defense ever is required for our national security.

REQUIREMENT FOR PHASE I EXPERIENCE  
BEFORE PHASE II PROCEEDS

QUESTION: Phase I was to provide test and operational experience. Aren't we now trying for further deployment before any tests or experience is obtained from Phase I?

ANSWER: Phase I will still be used to work out the problems that inevitably arise in the deployment of any new major weapons system and to provide operational experience in ballistic missile defense. The experience already gained in the Phase I deployment will be immensely beneficial in the activation and construction of the Modified Phase II site.

Continuation of Phase I only with additional research and development would have enabled us to proceed toward one desirable objective -- the operational checkout of the system. However, in view of the continued growth of the Soviet threat and the prospect of Chinese deployment of an ICBM force in the mid-1970's, we could not justify a year's delay in taking measures to protect ourselves against those threats. Phase I experience will definitely help us get the modified Phase II site ready to meet those threats in a timely and efficient manner.

If no activity beyond Phase I is conducted this year, further extensive delays would preclude full deployment completion to provide the area coverage of Safeguard against these threats until the late 1970's.



## THREAT SPEED VS DEPLOYMENT SPEED

QUESTION: If threats to Minuteman and bombers do materialize, Safeguard deployment will not be timely and will be inadequate when completed.

ANSWER: In order to keep pace with the advancing threat, we are requesting authorization to proceed with one additional site in FY 71, as well as do advance preparation work at five more. Completion of those sites will be phased to match our evaluation of the threat. Whether they exactly match the threat depends on how fast the threat develops.

If the threat develops more rapidly than expected, additional measures will have to be taken.

## MODIFIED SPARTAN MISSILE

QUESTION: What is the reason for development of another Spartan-type missile?

ANSWER: Dr. John S. Foster, Director of Defense Research and Engineering, has said: "The reason for adding the additional development, that is, the development of a Modified Spartan, is simply to provide an increased capability against the depressed trajectories of an ICBM or SLBM missile. When we consider the sites near the coastal areas and attempt to take on an attack launched from the sea, from Soviet Y Class submarines, there is the possibility that these missiles will come in in a so-called low, depressed trajectory."

"In order to be able to catch these in time we need a missile with additional velocity. So we are modifying the Spartan missile to be able to get additional velocity and provide the coverage of the B-52 forces against that kind of attack." \*

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\* Dr. Foster, Press Conference, 24 February 1970, Washington, D.C.



## U.S. AGGRESSIVE ATTITUDE

QUESTION: Won't Safeguard produce more aggressive attitudes by U.S. officials in time of tension leading to increased possibility of nuclear war?

ANSWER: A credible deterrent has been the backbone of U.S. existence in this nuclear world since the Soviets began building their ICBMs in meaningful numbers. Today and in the future a credible defense of our retaliatory weapons will likely be this nation's best guarantee that another power will not launch its nuclear missiles at us. Without such a real and believable defense, and short of arms agreements, the risks could become quite high in a time of tension. The United States would not have the ability to restore calm by negotiating from a position of strength--a credible defense, not superior offensive forces. As the President has stated, "I do not want to see an American President in the future, in the event of any crisis, to have his diplomatic credibility so impaired because the United States was in a second-class or inferior position." Thus, President Nixon and those who preceded him in the nuclear era have believed that diplomatic credibility sustained by deterrent or defense was essential to the nation, whereas the chance that "aggressive attitudes" arising from such power was so slight a risk that it was not considered a major factor.



CREDIBILITY OF SAFEGUARD SYSTEM  
PERFORMANCE BASED ON TEST PROGRAM

QUESTION: Has the Safeguard System proven its performance sufficiently during the test program to justify deployment?

ANSWER: The Research and Development portion of the Safeguard program is progressing very satisfactorily. At Meck Island, on Kwajalein Atoll in the Pacific, the prototype Missile Site Radar (MSR) began radiating power in September 1968 and has been under checkout since that time. It has met or bettered all of its design objectives and no serious deficiencies have been found. Beginning in March 1968, checkout of the MSR data processing system was initiated and successful operation of four data processing units in parallel has since been achieved. MSR software for the first part of the system test program has been completed and is being installed. Beginning in July 1969, tracking of local targets was accomplished with the initial software and, in December 1969, two ICBMs launched from Vandenberg AFB, California, were successfully tracked.

Also at Kwajalein, the Spartan interceptor has satisfactorily completed the first phase of development testing. As of March 5, 1970, we have had 15 R&D launches, of which 11 were completely successful, two partially successful and two not successful. The Spartan will now be integrated under MSR control in the system test program.

Our Sprint interceptor is being tested, also satisfactorily, at White Sands Missile Range, New Mexico. During 1969 Sprint tests yielded seven successes, two partial successes, and two not successful. The two failures, which occurred after a period of very high success, have been diagnosed and engineering corrections are being developed. The White Sands tests will be concluded shortly, and the system tests for Sprint started at Kwajalein.

The Perimeter Acquisition Radar is under fabrication and the first installation will be made at Grand Forks (the first Safeguard operational site). A radar of similar technology has already been constructed and operated at Eglin Air Force Base in Florida. A limited engineering development model of the PAR was constructed and activated at the Syracuse New York General Electric plant during 1969. We have encountered no serious technical problems in this development, and we have confidence of meeting the presently scheduled Equipment Readiness Date for the first PAR site. Certain important components are now being tested and, by September, 1970, about 95% of the PAR components are scheduled to be released for production.



The task of integrating all the major components into a system lies ahead. Missile integration tests will begin early this year at Kwajalein first with the Spartan and then with the Sprint under control of the MSR. Actual intercepts (without live warheads) will be conducted later against ICBM targets fired from Vandenberg AFB, California, and against Polaris targets fired from a Navy ship.

The AEC has carried forward its warhead testing satisfactorily. Tests of critical features were completed and weapon output measurements were made in 1969. Warhead sections with simulated warheads (no nuclear material) were flight tested on both Sprint and Spartan missiles.

At the conclusion of the R&D program, we will be able to judge the potential performance of the tactical system with confidence. However, R&D tests alone will not be relied on to prove the performance of the tactical system. Here we will evolve a regular program of operational tests applied to the tactical component.

For example, the radars will be exercised regularly against satellite targets of opportunity to assure high radar detection and tracking performance. To test the ground complex, including silos, launch of test missiles with only small amounts of propellant to prevent the interceptor from leaving the vicinity of the test site will assure the proper functioning of all the firing components.

Thus, we can test all of the elements of the tactical system, except the use of the warhead itself, in a realistic way. Here, the combination of underground testing and the meticulous design practice of the AEC gives us the highest confidence of successful operation in time of nuclear attack.



## COMPUTER CAPABILITY

QUESTION: Are the computer and programs too complex to perform the job?

ANSWER: While the data processing function for Safeguard is certainly complex, there is no basis for a conclusion that it will not perform as required.

The basic computing elements for Safeguard are not any more complicated than some of the computers already in operation. Two commercial computers, the Control Data Corporation 7600 and the IBM 360-91, exceed the Safeguard computing elements in computing capacity and both are operating satisfactorily.

The data processing job for Safeguard, like that for the successful Apollo program, is a difficult one. However, the requirements can be met. Prototype Safeguard data processors are operating successfully today, meeting their requirements at the Bell Telephone Laboratories and at the Kwajalein test facility.

Computer controlled radars using electronic beam steering techniques, like the Safeguard radars, are operating in the field. The Air Force FPS-85 radar in Florida is such an example. It is controlled by a large computer similar to the required for the PAR and is tracking thousands of space objects daily.

The data processing requirements for the Missile Site Radar are more demanding than that of the PAR. The first of four data processors for MSR at the Kwajalein test facility was installed in early 1968 and has since that time operated successfully. With installation of the second processor in April of 1969, it has operated successfully as a multi-processor unit. The fourth MSR data processor has been installed and the four processors were successfully tested as a multi-processor unit. The MSR, working with its data processor, has been tested successfully in two-way, closed-loop, communication with Spartan guidance unit and in tracking test targets. The first live intercept of a target with the engagement under computer control is scheduled for this summer.

The task remaining then is to integrate and thoroughly test all of the computer programs operating together in a tactical environment. These programs will be installed and tested rigorously at each site prior to its becoming operational. Additionally, once the sites have become operational the computer programs in conjunction with the other system components will be subjected to continuous system readiness verification.



## WON'T WORK

QUESTION: Will the system be effective?

ANSWER: The charge is made that the system won't work. From our research and development we are highly confident that the components will work. There is no reason to think that the answer will be different for tactical versions. The tactical system should actually be more reliable than the research and development system.

It is true that we have not yet demonstrated a Spartan or Sprint intercept capability, although we did successfully some years ago on a predecessor system, NIKE-ZEUS. We have, however, successfully fired both the Spartan and Sprint interceptors on numerous occasions. We have constructed and are testing a Missile Site Radar at the Kwajalein Atoll in the Pacific. The Missile Site Radar has met all of its objectives to date and on schedule. In the near future, we shall start firing the Spartan missile under control of that Missile Site Radar. Then a very few months later, integration tests will be made by tracking incoming ballistic missile re-entry vehicles and intercepting them with Spartan and Sprint missiles. All elements except the PAR then will be used: The Missile Site Radar, the data processor, Spartan and Sprint. The PAR will be used in integrated testing later on in the program.

The AEC will continue to test the warheads in a series of underground shots. A test model for the Perimeter Acquisition Radar (PAR) is in use and a PAR-like Air Force radar is operating successfully in Florida. Experience with earlier, less reliable systems deployed in the 1950s, though helpful, is not totally relative to a system to be deployed in the 1970s. Reliability has been tremendously increased with improved components (such as solid state electronics) and more modern methods of quality control.

To insure the continued availability of the system over the years, we are devising an operational test program to continuously test the system. After the sites are operational, the radars will be operated and tested against satellites and space debris in a manner quite similar to its normal surveillance and tracking operation. The equipment and crews will be tested continuously by means of an extensive exercise simulator built into each site.

We have had extensive experience with complex systems requiring an all-up readiness characteristic, for example, the Navy Polaris system. The Apollo moon program also proved that a complex technical task could be done well. It is expected that the Army and its contractor team will give a similar professional performance.



## DELAY MODIFIED PHASE II DEPLOYMENT

### UNTIL PHASE I IS COMPLETED

QUESTION: Why is it not adequate at this time to continue only with SAFEGUARD Phase I plus R&D until Phase I is completed?

ANSWER: Although continuation of Phase I only with additional research and development funding in FY-71 would certainly enable us to proceed toward one desirable objective -- that of the operational check-out of the system -- such a course of action would be dangerous from many aspects. It would foreclose the option to proceed with any kind of Phase II until as late as mid-1975 and therefore not have adequate defense to meet the large threats which appear to be developing for that time period.

The Soviet threat is real and exists today. The growth of the Soviet threat, with their continued deployment of ICBMs, the growing numbers of missile launching Soviet submarines, and the prospect of Chinese Communist deployment of an ICBM threat in the mid-1970s make it necessary for us to defend ourselves from these threats. There is no indication that the Soviets are slowing down their deployments. They have achieved a parity in ICBM forces and they are still moving forward. If we wait until the Phase I SAFEGUARD is in place in 1975 to begin Phase II, the minimal 2-site Phase I system would be all we have to face a vast Soviet threat. Any Phase II sites begun as late as 1975 could only be available in a minimum of from three to five years -- too late for the threats posed by Russia and China in the mid-70s.

Adding the Modified Phase II Whiteman site now is a step toward achieving in a meaningful time period all three of President Nixon's objectives: a defense of our land-based deterrent forces; a defense of our population against the type of attack the Chinese could launch; and a defense against accidental launch by any power. By deploying at Whiteman, we add significantly to the defense of the MINUTEMAN forces. The Phase I defense provides less than one-half of the Phase II SPRINTS for protecting MINUTEMAN silos. Deploying at Whiteman provides over three-quarters of the SPRINTS planned for Full Phase 2 MINUTEMAN protection -- enough to begin a valid defense of our Minuteman deterrent.

The experience already gained and that to be gained as we move ahead in our Phase I activities and R&D will be beneficial in the activation and construction of any Phase II site deployed at any time in the future. However, it would be wasteful in terms of both time and money not to take advantage of that which is geared up and ready for use.



At present, our production capability is in full swing and momentum has been generated. If there were no authorization for any SAFEGUARD sites beyond the two Phase I sites, production facilities would be closed down and production personnel would be discharged or diverted to other work as their Phase I production tasks were completed. Most Phase I tactical equipment and components will have been delivered on site at the beginning of the period set aside for installation and checkout; in other words, production of Phase I equipment and its delivery will have been completed about two years before Equipment Readiness Date (ERD). Thus, by the ERD of the Malmstrom complex in early 1975, production facilities would have been shut down for about two years.

If following completion of Phase I, production and deployment of a Phase II site were authorized, we would expect, based upon our experience in getting ready for Phase I production, that about one full year would be needed to re-establish production facilities and to hire and train the necessary personnel to produce SAFEGUARD equipment. It would then require about three years from the start of production until sufficient equipment had been produced for a third site. Of course, during this period of re-establishment of production capacity and the manufacture of the equipment for the third site we would also be undertaking necessary actions to select the actual site and acquire land and accomplish the needed construction. These activities would take about four years concurrent with the four year production period already described.

As in the case of the Phase I sites when the equipment has been produced and delivered on site, it would take roughly two more years for installation and checkout before the site would have achieved ERD. This delay would entail the following:

1. Nearly 10,000 trained production personnel would be discharged by the end of Phase I. To rebuild the production facilities to support a later deployment of Phase II sites would require that a similar number of personnel would again have to be hired and trained.

2. The re-establishment of the Phase II production and management team would require repetition of many of the costs (plus subsequent inflation) that were experienced in establishing production facilities for SENTINEL/SAFEGUARD Phase I. In point of fact, we would have paid twice to establish a production/management capability. Exclusive of inflation, the increase in DOD acquisition cost for the delayed full 12-site deployment would be increased by at least \$700 million.



Summary. The valuable experience in both R&D testing at Kwajalein and Phase I site activation will be available to support the Whiteman deployment. It is not necessary to wait for the completion of Phase I before authorizing the installation of the Whiteman site. The consequences of delaying authorization of a third site until Phase I is completed would waste money through duplication of effort and would delay installation of the third site by five years or more.



## SOFTWARE

QUESTION: Isn't the software terribly complicated?

ANSWER: The software for the SAFEGUARD System is indeed quite complicated, however, it is within the present state-of-the-art. There is no reason to believe that it will not be successfully developed, installed at the sites, and thoroughly tested within the established schedule.

There are a number of systems, both civilian and military, making use of data processors which have a degree of sophistication and complexity approaching that of SAFEGUARD. Specific examples in the civilian area include the NASA-Houston Real Time Operating System used in the APOLLO Program; the Air Traffic Control Systems of the FAA; AT&T's Electronic Switching System; and, the airlines reservations systems.

One operational military system of significant and similar complexity is the SAGE System, which has a net of radars feeding into about 20 Direction Centers. Each of these uses large computers to display information and to direct interceptors, both fighter aircraft and nuclear-armed BOMARC ground-to-air missiles. This system was started in the early 1950s in the pioneering days of data processor hardware and software, was in full deployment in the early 1960s and will be partially phased out in the early 1970s. In some respects that was a more difficult system to program than SAFEGUARD because software designers and programmers faced the problem of computer size limitations.

A second, and more recent, example is the USAF Phased Array Space Track Radar at Eglin Air Force Base in Florida. The complexity and size of its software is comparable to that to be used by the Perimeter Acquisition Radar (PAR) for SAFEGUARD. This radar was built, programmed, checked out, tested, and turned over to the Air Force for operation in four years. It has now been operated by the Air Force for more than a year.

Based on past experience, adequate time for software development has been scheduled and, even more importantly, sufficient time has been allowed for on-site software checkout and testing. The program is being managed by two of the most experienced contractors in the country. Bell Telephone Laboratories and IBM. The contractors and the Army are utilizing the experience gained from previous major systems.



## OPERATIONAL SYSTEM DEPLOYMENT

### AT KWAJALEIN

QUESTION: Wouldn't it be better to test the SAFEGUARD system at Kwajalein, rather than to buy more operational sites now which might cause confusion in the SALT?

ANSWER: The research and development portion of the SAFEGUARD program at Kwajalein Atoll in the Pacific is progressing very satisfactorily and performing the function for which it was intended. It is not, however, capable of being the facility in which we could check out operational procedures as we expect to on the Phase I operational sites. The best and least expensive way to achieve this integration and check-out of the operational system is by deploying an operational entity here in the United States.

A full operational complex in the Pacific would cost more than \$2 billion. It would be 1975 before we would be ready to begin checking out the system. If deployment in the United States were withheld until the testing was carried out at Kwajalein, it would be in the late 1970s before an effective deployment could be made in the U. S. -- too late to meet the anticipated Soviet and Chinese threats. If deployment became necessary, then we would find ourselves in the position of having an expensive operational installation in the Pacific where it would do no defensive good, while at the same time U. S. operational deployment would be seriously behind the threat.

There does not appear to be a basis for concluding that a decision to install an operational site in the Pacific would improve the U. S. position in Strategic Arms Limitation Talks. On the contrary, it would appear to undermine the positive position that the President has sought in such talks while retaining his flexibility to respond to a Soviet or to the developing Chinese threat.



FCC

March 26, 1970

**MEMORANDUM FOR**

**Mr. David Peckard  
Deputy Secretary of Defense**

As we discussed on the phone, I am forwarding the names of four people we have considered in one way or another for positions in the new Office of Telecommunications Policy and who you might wish to consider for the position of Assistant to the Secretary of Defense for Telecommunications.

Each is an outstanding individual in his own way. Although each represents a different mix of abilities.

**Clay T. Whitehead  
Special Assistant  
to the President**

**Attachment**

**cc: Mr. Flanigan  
Mr. Whitehead  
Central Files**

**CTWhitehead:ja**

Assistant to Sec. Def. (Telecomm.)

1. Thomas F. Rogers  
Vice President, Mitre Corp.
2. Charles Joyce  
NSC staff
3. Gerald P. Dineen  
Assoc. Director, MIT Lincoln Lab
4. Paul Visher  
Assoc. Head, Space Systems Div., Hughes Aircraft Co.



## BIOGRAPHIC DATA - THOMAS F. ROGERS

T. F. Rogers, appointed to the position of Vice President - Urban Affairs at the Mitre Corporation on June 1, 1969, was most recently Director of the Office of Urban Technology and Research in the Office of the Secretary of the Department of Housing and Urban Development. He was born in Providence, R. I., on August 11, 1923. He attended elementary and secondary schools there, and received his B. Sc., cum laude, in Physics, from Providence College in 1945. In 1949 he was awarded the M. A. degree, also in Physics, from Boston University.

During his professional career, Mr. Rogers has held industrial, university and Government positions.

Among those held were the following: research associate, Radio Research Laboratory, Harvard University, Cambridge, Massachusetts, 1944-45; TV project engineer, Bell & Howell Company, Chicago, Illinois, 1945-46; electronic scientist, U. S. Air Force Cambridge Research Center, Bedford, Massachusetts, 1945-54; associate group leader, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, Massachusetts, 1951-53 (on loan to M. I. T. from AFRCRC); head, communications laboratory, U. S. Air Force Cambridge Research Center, Bedford, Massachusetts, 1954-59; head, communications division, and member of the steering committee, Lincoln Laboratory, M. I. T., Lexington, Massachusetts, 1959-64. In this last position, Mr. Rogers was concerned with the development of large defense tropospheric and ionospheric scatter communication circuits and networks, and headed most of the Laboratory's space research and development programs.

Early in 1964, Mr. Rogers took leave of M. I. T. to accept an appointment with the Department of Defense as an Assistant Director (Communications & Electronics) of Defense Research and Engineering in the Office of the Secretary of Defense. In 1965, he was promoted to a Deputy Director

(Electronics and Information Systems). In this capacity, he was responsible for administering large research, development, engineering and systems programs in the areas of electronics, communications, data handling, intelligence, reconnaissance, and command and control programs budgeted at billions of dollars during his tenure. In particular, he was instrumental in bringing D. O. D.'s global satellite communications network into being, and in initiating its tactical satellite communications activities.

In May, 1967, Mr. Rogers was appointed by the (then) Secretary of the Department of Housing and Urban Development, Robert C. Weaver, as the first Director of the Department's newly created Office of Urban Technology and Research. This Office (now headed by an Assistant Secretary) served as the focal point for the stimulation, coordination, analysis and evaluation of all research and development activities related to H. U. D. programs and responsibilities.

During his two years with H. U. D., he organized the first Federal office and program specifically directed, from cabinet level, to a broad scientific and technological attack upon urban problems. He saw the Department become, by Executive Order, a formal member of the Federal Council on Science and Technology (chaired by the President's Science Advisor) and was the Department's member on the Council; helped to form an Urban Institute; actively encouraged the entrance of the Department of Defense into the study of defense-related domestic problems; initiated the country's first major national experimental housing project - the "In-Cities" project; stimulated a growth in general research and development appropriations from 1/2 million to \$11 million, and successfully defended an increase to \$30 million requested of the Congress by the new Administration.

Mr. Rogers has received several special awards, including the Outstanding Civil Service Performance Award in 1957, a Certificate of Commendation from the Secretary of the Navy in 1961, and the Meritorious Civilian Service Award and Medal from the Secretary of Defense in 1967 - the highest civilian award made by the Secretary. Early this year he



3.  
received an Engineering News Record Award for "Construction's Man of the Year" - an award shared with Secretary of Transportation John Volpe, Senator John Sparkman, Mayor John Lindsay, Whitney Young and Postmaster General Winton Blount.

His professional publications reflect his work on various aspects of radiowave propagation, communications, electronic memory devices, ultrasonics, housing and molecular physics.

Mr. Rogers has been a member of several inter-Agency Government groups, including the Aeronautics and Astronautics Coordinating Board (the AACB), has served on several Government advisory groups such as the Communications Satellite Panel of the President's Scientific Advisory Committee, and was a member of the United States delegation to the United Nations' Geneva meeting on the Application of Science and Technology for the Benefit of Less Developed Areas. He has testified oftentimes before various Committees of the Congress.

He has recently been made a Senior Associate of the Joint Center for Urban Studies of the Massachusetts Institute of Technology and Harvard University.

He is also a Member or Fellow of several national and international scientific and engineering societies. He is a Fellow of the Institute of Electrical and Electronics Engineers, and a past member of its Board of Directors. He is a member of the Cosmos Club, and is listed in American Men of Science and Who's Who in America.

Mr. Rogers is married to the former Estelle Elizabeth Hunt and has three daughters, Clare, Judith and Hope. He is a resident of McLean, Virginia.



# HUD NEWS

U.S. DEPARTMENT OF HOUSING  
AND URBAN DEVELOPMENT  
WASHINGTON D.C. 20410

HUD-No. 1687  
(Phone 382-1433)

FOR RELEASE  
After 10:00 A.M.  
Friday  
March 31, 1967

Thomas F. Rogers has been appointed to the position of Director, Office of Urban Technology, to be established in the Department of Housing and Urban Development.

The appointment, announced today by HUD Secretary Robert C. Weaver, will become effective on May 1, 1967.

In this new post, Mr. Rogers will be directly responsible to Secretary Weaver and Under Secretary Robert C. Wood. Mr. Rogers' office will be the focal point for the stimulation, coordination, analysis and evaluation of all research and development related to HUD programs.

Commenting on Mr. Rogers' appointment, Secretary Weaver said: "New technologies must be developed if we are to bring the physical environment of our urban areas to the level necessary to serve modern needs and standards. This new office is intended to stimulate the initiative and ideas in HUD to do this. Mr. Rogers brings us the experience and background that will help us accomplish that mission."

Mr. Rogers, a prominent scientist and engineer, is presently a Deputy Director of Defense Research and Engineering in the Office of the Secretary of Defense. He has held industrial, university and Government positions. He has been on leave from the Massachusetts Institute of Technology to the Defense Department since February 1964.

As the Deputy Director for Electronics and Information Systems, Mr. Rogers has been responsible for managing large

-- more --



research, development, engineering and systems programs in such areas as electronics, communications, data handling, and command and control - programs budgeted at billions of dollars during his tenure. He has been influential in bringing into being the Department's satellite communications global network, and has particularly encouraged the broadest of systems studies and applications within his area of responsibility.

Before joining the Department of Defense, Mr. Rogers was Head of the Communications Division and Steering Committee Member of MIT's Lincoln Laboratory.

He received a B.S. degree in Physics from Providence College in 1945, and an M.A. degree, also in Physics, from Boston University in 1949.

His publications reflect his research work on various aspects of radiowave propagation, communications, electronic memory devices, ultrasonics and molecular physics. He is a member of several national and international scientific and engineering institutes and societies, a Fellow of the Institute of Electrical and Electronics Engineers and a past member of its Board of Directors.

Mr. Rogers has been a member of several inter-Agency Government groups, including the Aeronautics Coordinating Board. He has served on such Government advisory groups as the Communications Satellite Panel of the President's Scientific Advisory Committee, and was a member of the United States delegation to the United Nation's Geneva meeting on the Application of Science and Technology for the Benefit of Less Developed Areas.

# # #

BIOGRAPHIC DATA -- Thomas F. Rogers

T. F. Rogers, Director of the Office of Urban Technology and Research in the Office of the Secretary of the Department of Housing and Urban Development, was born in Providence, R. I., on August 11, 1923. He attended elementary and secondary schools there, and received his B.Sc., cum laude, in Physics, from Providence College in 1945. In 1949 he was awarded the M.A. degree, in Physics, from Boston University.

During his professional career, Mr. Rogers has held industrial, university and Government positions.

Among those held were the following: research associate, the Radio Research Laboratory of Harvard, 1944-45; TV project engineer, the Bell & Howell Company, Chicago, 1945-46; electronic scientist with the U. S. Air Force Cambridge Research Center, Bedford, Mass., 1945-54; associate group leader with the Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, Mass., 1951-53; laboratory head, U. S. Air Force Cambridge Research Center, Bedford, Mass., 1954-59; head, communications division and member of the steering committee, Lincoln Laboratory, M.I.T., 1959-64.

Early in 1964, Mr. Rogers took leave from M.I.T. to accept an appointment with the Department of Defense as an Assistant Director (Communications & Electronics), of Defense Research and Engineering in the Office of the Secretary of Defense. In 1965 he was promoted to a Deputy Director (Electronics and Information Systems). In this capacity, he was responsible for managing large research, development, engineering and systems programs in such areas as electronics, communications, data handling, reconnaissance, and command and control - programs budgeted at billions of dollars during his tenure. In particular, he was instrumental in bringing into being D.O.D.'s satellite communications global network.

Mr. Rogers has received several special awards including the Outstanding Civil Service Performance Award in 1957, a Certificate of Commendation from the Office of the Secretary of the Navy in 1961, and the Meritorious Civilian Service Award from the Secretary of Defense in 1967.

In May, 1967, Mr. Rogers was appointed by Secretary Robert C. Weaver as the first Director of the newly created Office of Urban Technology and Research. This Office serves as the focal point for the stimulation, coordination, analysis and evaluation of all research and development activities related to H.U.D. programs and responsibilities.

His scientific and engineering publications reflect his professional work on various aspects of radiowave propagation, communications, electronic memory devices, ultrasonics and molecular physics.



Mr. Rogers has been a member of several inter-Agency Government groups, including the Aeronautics and Astronautics Coordinating Board (i.e., the AACB). He has served on such Government advisory groups as the Communications Satellite Panel of the President's Scientific Advisory Committee, and was a member of the United States delegation to the United Nations' Geneva meeting on the Application of Science and Technology for the Benefit of Less Developed Areas.

He is also a Member or Fellow of several national and international scientific and engineering institutes and societies, a Fellow of the Institute of Electrical and Electronics Engineers, and a past member of its Board of Directors. He is also a member of the Cosmos Club.

Mr. Rogers is married to the former Estelle Elizabeth Hunt, and has three daughters, Clare, Judith, and Hope. He is a resident of Washington, D. C.

March 1968

Charles C. Joyce, Jr.  
5205 Flanders Avenue  
Kensington, Maryland  
Age: 35

Home Telephone: 946-9072  
Office Telephone: 395-3370

Current Position:

National Security Council Staff.

Current Responsibilities:

Plan and manage the implementation of new methods and facilities for acquiring, processing and displaying information for the President and the National Security Council.

Education:

Bachelor of Science in Electrical Engineering, M.I.T., 1956  
Master of Science in Electrical Engineering, M.I.T., 1958  
Master of Science in Industrial Management, M.I.T., 1963

Employment:

1969 to Present      National Security Council

(See above.)

1966 to 1969      Office of the Assistant Secretary of  
Defense (Systems Analysis)

Director of the Command, Control and Communications Division (1967-69). Responsible for analysis of all Defense Department programs in the C<sup>3</sup> area. Specific areas analyzed included: the Defense Communications System; Field Army and Theater Army Communications; Project Mallard; Fleet Communications; Tactical Air C<sup>3</sup>; Worldwide Navigation; Satellite Communications.

Prior to 1967, performed similar work as a staff member of the Command, Control, Communications and Intelligence Division.



Employment:

(Cont'd)

1963 to 1966

The Mitre Corporation  
NMCS Division  
Washington, D. C.

Sub-Department Head, Advanced Planning (1964-66). Responsible for the initial studies and plans for new Mitre support tasks for the National Military Command System and related areas. Specific tasks included: design of an economic modeling and analysis-capability for the Defense Communications System; development of a master plan for a special Presidential Command and Control Facility.

Prior to 1964, as a member of the Technical Staff, performed requirements analyses, system design and cost studies in support of the National Military Command System.

1959 to 1966

The Mitre Corporation  
Advanced Planning Department  
Bedford, Massachusetts

Performed planning studies and cost-effectiveness studies for Air Force Command and Control Systems.

Selected as a Mitre Staff Scholar in 1961 and attended M. I. T. School of Management, 1961-63.

Honorary Societies:

Tau Beta Pi, Eta Kappa Nu, Sigma Xi.

(1) Gerald P. Dinneen

Age: 45      Education: Mathematics, BS from Queen's College, New York; MS and PhD from Univ. Wisconsin. US Army in WW2, and two years industrial experience. With MIT Lincoln Laboratory since 1953. Now Associate Director and formerly head of Communications Division. Did significant work on computers and software, plus modulation schemes and communications satellites. Heavily involved in DOD problems via DDRE and Intelligence advisory groups.

Drive:	A, and a good leader.
Technical:	B-, very bright and sound but not deep in engineering problems.
Economics:	C, probably no experience.
Telecommunications:	B, mostly in military uses.
Policy:	A, very good at bridging and focusing diverse considerations.
Diplomacy:	A, charming, logical, and very articulate.
Summing Up:	An unusually able and attractive man who works easily between policy and science.



(3) Paul S. Visher

Age: 47      Education: Chemistry, with AB from Univ. Indiana, and Law with LLB from Yale in 1949. Practiced patent law for three years in San Francisco, and ranged for four years. Joined Hughes in 1956 and has risen to Associate Head of Space Systems Division where he is responsible for satellite communications. Served one year in DOD directing Civil Defense in 1961. Totally absorbed in telecommunications technical and policy problems for last eight years.

Drive:	A, though something of a loner.
Technical:	B, thoroughly conversant with technology though not an engineer.
Economics:	B, quite a good grasp.
Telecommunications:	A, clearly understands most of the field.
Policy:	A, unusual ability to bridge over and focus diverse considerations.
Diplomacy:	B, impressive and articulate but somewhat full of himself.
Summing Up:	A mighty bright fellow who understands the telecommunications problem in all its ramifications.



OFFICE OF THE SECRETARY OF DEFENSE  
WASHINGTON 25, D. C.

20 March 1970

Mr. Clay T. Whitehead  
Special Assistant to the President  
Executive Office Building  
Washington, D. C. 20500

Dear Mr. Whitehead:

Mr. Packard asked that the enclosed memorandum on the proposed Assistant to the Secretary of Defense (Telecommunications) be forwarded to you.

Sincerely,

A handwritten signature in cursive script, reading "James G. Boatner", is written over the typed name and title.

James G. Boatner  
Colonel, USA  
Military Assistant to the  
Deputy Secretary of Defense

Enclosure  
As stated



## Assistant to the Secretary of Defense (Telecommunications)

### I. GENERAL

Pursuant to the authority vested in the Secretary of Defense and the provisions of the National Security Act of 1947, as amended, including the DoD Reorganization Act of 1958, the position of Assistant to the Secretary of Defense (Telecommunications) is hereby established with responsibilities, functions, and authorities as prescribed herein.

### II. RESPONSIBILITIES

The Assistant to the Secretary of Defense (Telecommunications) is the principal staff assistant to the Secretary of Defense on telecommunications matters. He is also the principal assistant to the Secretary of Defense for the National Communications System.

### III. FUNCTIONS

Under the direction, authority and control of the Secretary of Defense, the Assistant to the Secretary of Defense (Telecommunications) shall perform the following functions:

#### A. General

1. Serve as principal staff assistant to the Secretary of Defense for telecommunications matters.
2. Act as DoD coordinator in the area of telecommunications, including telecommunications for, but not the function of, command and control.

3. Act as the DoD coordinator for those special telecommunications of a sensitive nature, e.g., those related to the support of intelligence functions.
4. Monitor non-telecommunications actions with respect to their impact upon telecommunications plans and programs.
5. Serve as the DoD central point of contact on telecommunications matters to organizations external to DoD.
6. Perform such other functions as the Secretary of Defense may assign.

B. National Communications System (NCS)

1. Serve as the principal assistant to the Secretary of Defense in his role as Executive Agent, NCS.
2. Coordinate as necessary with all agencies participating in the NCS.
3. Review progress in fulfilling NCS responsibilities and recommend to the Executive Agent for the NCS, as appropriate, measures for improving the NCS and for securing efficiency, effectiveness, and economy.
4. Provide for the receipt and processing of requests from any agency having requirements for service from the NCS to include determining feasibility, developing alternative methods of implementation, and recommending appropriate priorities.
5. Recommend NCS related tasks to be assigned to the Manager, NCS, or to other governmental agencies as appropriate.

C. Policy and Planning

1. Develop, coordinate and recommend DoD telecommunications policy.



2. Develop implementing directives to support approved telecommunications policy and to provide processes for telecommunications planning.
3. Serve as a member of the Defense System Acquisition Review Council.
4. Coordinate efforts within the Office of the Secretary of Defense to insure that adequate controls exist for:
  - a. The development and procurement of integrated secure means of telecommunications.
  - b. Achievement of compatibility between telecommunications systems and their related cryptomaterials.
  - c. The necessary interchange of technical information between interested agencies.
5. Serve as a central point for coordination and review of telecommunications plans of the NCS, Services and DoD agencies.

D. Programming and Budgeting

1. Coordinate and provide recommendations on program/budget policies and procedures as they relate to telecommunications.
2. Coordinate and provide recommendations on telecommunications programs, budgets, financial plans and related financial management activity.
3. Serve as principal DoD witness to testify on telecommunications programs/budgets before committees of the Congress.
4. Review NSA submissions on telecommunications security equipment and decisions with respect thereto for consistency with other telecommunications programs.

#### IV. SCOPE

The scope of telecommunications for which the Assistant to the Secretary of Defense (Telecommunications) has responsibility is delineated below:

##### A. Categories of Telecommunications

1. The Defense Communications System as defined in DoD Directive 5105.19 including transportable contingency assets for extension or restoral of the DCS.
2. Camp, post, base, and station telecommunications.
3. Fixed and/or transportable non-DCS telecommunications facilities which are not included in telecommunications equipment/systems considered to be organic to military forces/units.
4. Telecommunications equipment/systems considered to be organic to military forces/units.
5. DoD elements of the National Communications System (to the extent this category is not included in the DCS).
6. Those special telecommunications of a sensitive nature, e.g., those related to the support of intelligence functions.
7. Telecommunications security (COMSEC) equipment insofar as reviewing such matters for consistency with other telecommunications matters.
8. Telecommunications for command and control, including directly coupled displays, consoles, processors, and other terminals whose primary function is telecommunications, and special subsystems such as Minimum Essential Emergency Communications Network (MEECN).



9. Areas indicated below are specifically excluded except to the extent necessary to establish interface and radio frequency compatibility with other systems:

a. Electronics including sensors such as radars, SIGINT (COMINT and ELINT), and electronic warfare systems.

b. Telecommunications integral to weapons systems designed for and usually delivered with and as a part of the airplane, missile complex, ship, tank, etc., whose costs are normally included in the cost of the weapons system.

B. The responsibilities for management and operational direction of telecommunications resources will remain with the Services and the Defense Communications Agency.

#### V. RELATIONSHIPS

A. In the performance of his functions, the Assistant to the Secretary of Defense (Telecommunications) shall:

1. Coordinate actions, as appropriate, with DoD components having collateral or related functions.

2. Make full use of established facilities in the Office of the Secretary of Defense and other DoD components rather than unnecessarily duplicating such facilities.

3. Maintain active liaison for the exchange of information and advice with DoD components as appropriate.

B. The heads of all Department of Defense components and their staffs shall cooperate fully with the Assistant to the Secretary of Defense (Telecommunications) and his staff in a continuous effort to achieve efficient

administration of the DoD and to carry out effectively the direction, authority, and control of the Secretary of Defense.

**VI. AUTHORITIES**

The Assistant to the Secretary of Defense (Telecommunications), in the course of exercising staff functions, is hereby specifically delegated authority to:

- A. Issue instructions and one-time directive-type memoranda, in writing, appropriate to carrying out policies approved by the Secretary of Defense for his assigned fields of responsibilities in accordance with DoD Directive 5025.1. Instructions to the military departments will be issued through the Secretaries of the departments or their designees.
- B. Obtain such reports and information and assistance from the military departments and other DoD agencies as may be necessary to the performance of his assigned functions.
- C. Communicate directly with the Secretaries of the military departments, the Joint Chiefs of Staff, the Directors of the Defense Agencies and the Director, National Security Agency.
- D. Establish arrangements for DoD participation in those non-defense governmental programs for which he has been assigned primary staff cognizance.
- E. Communicate directly with all governmental agencies participating with DoD in those non-defense governmental programs for which he has been assigned primary staff cognizance.
- F. Establish procedural arrangements for the discharge of over-all responsibilities of the Executive Agent for the NCS.



- G. Request such reports, information and assistance from governmental agencies participating in the NCS, as may be necessary.
- H. Communicate directly with all governmental agencies participating in the NCS and, after appropriate clearance, with representatives of other nations on NCS matters.

#### VII. EFFECTIVE DATE

This directive is effective immediately. Necessary follow-on organizational and implementing actions will be taken as rapidly as possible. Whenever the Assistant to the Secretary of Defense (Telecommunications) assumes responsibility for a function assigned him under the terms of this directive, all DoD Components will review their existing directives, instructions, and other issuances for conformity. Two copies of all publications issued in implementation shall be forwarded to the Assistant Secretary of Defense (Administration) within 60 days for record purposes.



DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING  
WASHINGTON, D. C. 20301

DD

12 MAR 1

MEMORANDUM FOR THE SECRETARIES OF THE MILITARY  
DEPARTMENTS  
CHAIRMAN, JOINT CHIEFS OF STAFF  
ASSISTANT SECRETARY OF DEFENSE (COMPTROLLER)  
ASSISTANT SECRETARY OF DEFENSE (MANPOWER  
AND RESERVE AFFAIRS)  
ASSISTANT SECRETARY OF DEFENSE (SYSTEMS  
ANALYSIS)  
ASSISTANT TO THE SECRETARY (ATOMIC ENERGY)  
ASSISTANT DIRECTOR (NUCLEAR PROGRAMS)

SUBJECT: Radiobiology Research in the DoD

The radiobiology research programs of the DoD have recently been reviewed by an Ad Hoc Committee at my request. A copy of the report (less appendices) is attached. The Committee has concluded that radiobiology research in the DoD has reached a technical point where a change of direction, a consolidation of staff and program and a reduction of funding is in order.

The DoD radiobiology research program has been mainly devoted to nuclear weapons effects research (NWER) since its inception. The Committee has concluded that the biological data and predictive information required by weapons systems designers and potential weapons users is either in hand or will be in the next two to three years.

It now appears that the effort should focus upon the medical aspects of preventing and treating radiation illness. With this change in direction and with fewer resources available in people and money to support all DoD research, I believe that it is appropriate to consider consolidation and redirection of this program. The Navy has no effort in this area; the Army has cancelled its in-house program at Walter Reed Army Institute of Research; the Air Force has cut its budget in half since FY 69. The present DASA program will essentially reach a technical end by FY 72-73.

Sent by to  
H. Mitchell

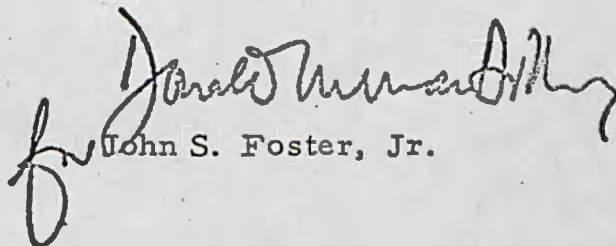


The major DoD resource in radiobiology research is the Armed Forces Radiobiology Research Institute (AFRRI) at the National Naval Medical Center in Bethesda. We have a \$14.0M investment in one of the best facilities in the country. This laboratory is capable of supporting the entire DoD effort. The Committee has recommended that the AFRRI be removed from the command of the Director, DASA, and placed under the management control of the Secretary of the Navy for further management by the Surgeon General of the Navy as a tri-Service medical research laboratory. The model proposed is that of the Armed Forces Institute of Pathology.

Beginning in FY 72, significant savings could be achieved, so that by FY 76 the program should cost \$3.2M a year rather than the present \$5.3M. In addition, by increasing military medical department officer spaces at the AFRRI we would retain a cadre of uniformed staff who will otherwise be lost as the Military Departments reduce or eliminate their in-house programs.

I would like your comments on the recommendations of the report that separate efforts in each department be phased out and that funds and personnel spaces be consolidated at the Armed Forces Radiobiology Research Institute; that the Institute be placed under the Secretary of the Navy as executive agent and under medical control and direction, and that the research effort be primarily focused upon the medical aspects of preventing, diagnosing and treating illness due to ionizing radiation. A capability to perform radiobiological NWER will be retained.

Dr. Donald MacArthur, Deputy Director (Research & Technology), is the ODDR&E point of contact. I would like to have the benefit of your comments by 1 April 1970.

  
John S. Foster, Jr.

Attachment



OFFICE OF THE DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING  
WASHINGTON, D. C. 20301

10 MAR 1970

MEMORANDUM FOR: DEPUTY DIRECTOR (RESEARCH AND TECHNOLOGY)

SUBJECT: Transmittal of Report of DDR&E Ad Hoc Radiobiology Research  
Review Committee

In response to your request, a committee was formed with representatives from the Army, Navy, Air Force, Defense Atomic Support Agency, and the Office of the Assistant Director (Chemical Technology). The committee heard presentations from each military department and DASA, made an on-site visit to the Armed Forces Radiobiology Research Institute, and secured information about the radiobiology research programs of the Atomic Energy Commission, the Department of Health Education and Welfare, the National Aeronautics and Space Administration, and the Office of Civil Defense.

The major conclusions of the committee, as presented in the report, are that nuclear weapons' effects research is essentially complete for the present time; that separate radiobiology research programs in each military department are no longer required; that the DoD radiobiology research effort should be centralized, and that the radiobiology research problems of the future are the medical problems of diagnosis, prevention and treatment of illness due to ionizing radiation.

The major recommendations are that DoD radiobiology research should be centralized at the AFRRI; that the AFRRI should be made a tri-service laboratory under the executive management of the Secretary of the Navy and the Navy Surgeon General; that the research program at the AFRRI should be directed at the solution of medical problems, and that the military departments should phase out their separate efforts or transfer the work to the AFRRI. If these recommendations are adopted, we believe that the present cost of the program of \$5.3M for FY-71 could be reduced to \$3.2M by FY-76.

I will be pleased to discuss the findings of the committee with you at any time.

*Chris J. D. Zarafonitis*

Chris J. D. Zarafonitis, M.D.  
Chairman, Ad Hoc Radiobiology  
Research Review Committee  
Professor of Medicine  
University of Michigan



TABLE OF CONTENTS

<u>Item</u>	<u>Tab</u>
Committee Reports	A
Establishing Memorandum for the Ad Hoc Committee, 29 July 1969	B
Outline of Committee Policy, Working Memorandum No. 1	C
Defense Atomic Support Agency and Armed Forces Radiobiology Research Institute Programs	D
Department of the Navy Program	E
Department of the Army Program	F
Department of the Air Force Program	G
Atomic Energy Commission Program	H
National Institute of Health Program	I
Office of Civil Defense Program	J
National Aeronautics and Space Administration Program	K
Command Relationships, AFRRI, 23 Sept. 1963	L
DoD Directive 5120.30, Armed Forces Institute of Pathology, 6 August 1963	M

TAB A

COMMITTEE REPORT



### SUMMARY

The radiobiology research programs in DoD, AEC, NASA, and HEW were surveyed to determine if the DoD program was appropriate to the needs of today's problems.

After 25 years of nuclear weapons effects research, the Committee concluded that the program emphasis should change from effects research for predictive purposes to medically oriented and directed programs aimed at providing information about diagnosis, prevention and treatment of ionizing radiation illness.

In order to conserve staff and funds and most fully utilize facilities, the Committee recommends that the separate radiobiology research programs of the military departments be combined at the Armed Forces Radiobiology Research Institute (AFRRI), Bethesda, Maryland. The Committee further recommends that the command of AFRRI be transferred from the Defense Atomic Support Agency to the Secretary of the Navy as Executive Manager. It is believed that funding can thus be reduced from the present \$5.1M to \$3.2M by FY 1976.

# REPORT OF AD HOC DDR&E RADIOBIOLOGY RESEARCH REVIEW COMMITTEE

## INTRODUCTION

This committee was formed to evaluate DoD RDT&E in radiobiology and to determine:

1. What is the medical problem as related to the military mission?
2. What is the present DoD program and can it solve the problem?
3. What are the AEC, HEW and NASA programs and what aspects are applicable to the DoD problem?
4. How should DoD organize, fund and staff its radiobiology research program?

These questions, the Committee findings, and a recommended program are addressed below.

## GENERAL COMMENTS

Radiobiology research is divided into two general areas: (1) nuclear weapons effects research (NWER) and (2) medical aspects of the prevention, diagnosis and therapy of illness due to ionizing radiation. In NWER, investigations are separated into studies of ionizing radiation effects, blast effects, and thermal effects. In each of these areas, the problems studied have related to casualty prediction, dosimetry, incapacitation, vulnerability and physical protection. In medical aspects, the same three kinds of effects have been studied, the problem areas have been separated into prevention, general and specific treatment, and basic research in radiobiology.

## THE PROBLEMS

In general, the Committee found that DoD radiobiology research has been mostly directed at answering the questions of weapons systems designers and potential users. The primary, long-term goal for future DoD radiobiology research is to reduce the effects of ionizing radiation on Service personnel. The secondary goals, in order of priority, are:

1. NWER on various gamma/neutron ratios. The presently planned programs are structured to be essentially complete in FY 1973.
2. Finish NWER on flashblindness protective materials. The radiobiology research aspects of this work will be finished in FY 1972.

## THE PRESENT PROGRAMS

### I. Defense Atomic Support Agency Program

A. The DASA program is a NWER program. Forty percent is done on contract and sixty percent at the Armed Forces Radiobiology Research Institute (AFBRI). The FY 70 funding is \$4.119M; the program is



controlled by the Director, DASA, and managed by medical staff assigned to the DASA Medical Directorate. AFRRI is a DASA laboratory.

B. The Armed Forces Radiobiology Research Institute Program

1. The total staff is 145 civilians, 30 officers and 26 enlisted men. Two-thirds of the staff are in R&D, one-third is in support and administration. 33 members of the staff have doctoral degrees, 24 have masters degree.
2. Total funding for FY 70 is \$2.6M; of which basic overhead and salaries cost \$1.7M.
3. The building program begun in 1960 is now complete. The investment in building is \$7.8M; in radiation sources it is \$6.0M; thus for total facilities there is an investment of \$13.8M.
4. The program is directed toward four overall areas:

<u>Area</u>	<u>Percent of Funds</u>	<u>Percent of Staff</u>
a) Incapacitation/performance decrement	41	45
b) Acute lethal effects	31	36
c) Biochemistry/Physiology	18	14
d) Biophysics/Physics Support	10	6

5. Except for a shortage of animal quarantine facilities, the AFRRI has the physical plant and radiation sources to support the long-term DoD goals in radiobiology research. Present staff and money shortages prohibit using the radiation sources much beyond a 40-hour work week. Radiation source use could be extended by double shifting if more staff were available.

C. Incapacitation and Performance Degradation; NWER(overall DASA efforts)

1. Funding is \$1.0M a year, with 60% of the work done at AFRRI and the remainder at the USAF School of Aerospace Medicine. This present program is planned for completion in FY 1973, with the exception of a small continuing effort in mixed gamma/neutron ratio studies.
2. The goal is to define the acute effects of lethal and supra-lethal doses of ionizing radiation and to predict the ability of a man to complete a mission, even though he is expected to die from radiation injury. These data are needed by military planners and potential weapon users to define the levels of "hardening" of systems and to predict the effects of our weapons on personnel.

D. Blast Effects; NWER

1. Funding is \$150K, on contract. This program will be ended in FY 1972.

E. Thermal Effects; NWER

1. Funding is \$770K, on contract; the research is on skin burn and flashblindness. This program will be ended in FY 1972.

F. Radiation Injury - Fundamental Research

1. This is basic work on NWER. Funding is \$1.75M, with 80% of the work carried out at AFRRI.
2. The goal is to provide basic information about the responses of cells, organs and animals to ionizing radiation, using the tools of specific disciplines such as biochemistry, physiology, etc.

G. Treatment of Radiation Injury

1. This is a medically oriented program. Funding is \$200K, all at AFRRI. The effort is on physiological support for the irradiated individual.

II. The Department of the Navy Program

A. There is no USN program in radiobiology research since the Naval Radiological Defense Laboratory closed.

B. There are now 40 military officer personnel spaces in nuclear medicine, all assigned to operational, clinical and staff positions.

III. The Department of the Air Force Program

A. This is primarily a NWER program, with some studies on mechanisms of action of ionizing radiation. FY 70 USAF funding is \$195K; DASA and NASA provide another \$300K of support.

B. Research Studies

1. Survivability/vulnerability data on man as a system component in the programming of present and the designing of future Air Force weapons systems.
2. Effects of low level (fallout) dosage on primate performance.
3. Combined effects of radiation and the operational flight environments, such as acceleration, vibration, hypoxia, etc.
4. Use of a whole body counter in the clinical evaluation



program of the School of Aerospace Medicine.

5. Completion of research work on flashblindness parameters.
6. Program of Biophysics Division, AF Weapons Laboratory, Kirtland AFB
  - a) Using GODIVA reactor; radiating sheep with various neutron/gamma mixtures (DASA supported).
  - b) Computer modeling studies to predict crew exposures in different aircraft configurations.
  - c) OV-1 satellite dosimetry (NASA support).
  - d) Scientific staff: 21 military; 6 civilians
  - e) Technical staff: 9 military; 7 civilian
  - f) USAF funds at \$50K/year.  
- DASA funds at \$90K/year.  
NASA funds at \$60K/year.

C. The critical and unique USAF problem is the survivability/vulnerability analysis of man as a system component in present and future USAF weapon systems--to include: (1) The external radiation-blast-thermal environment up to 100,000 feet. (2) The evaluation of performance degradation under the multiple stresses of the operational flight environment.

D. There are 81 professional and 16 technical people assigned to the program.

E. There was a request (deferred) in the FY 71 MCA for \$1.1M for a Bionuclear Effects Laboratory at Kirtland AFB.

#### IV. The Department of the Army

A. This is primarily an anti-radiation prophylactic drug development program. It has cost approximately \$15.0M in the past 10 years and has produced 3 drugs which are now ready for tolerance testing in man. These may double the radiation dose required to produce symptoms or illness, i.e., a dose reduction factor of two. It has also serendipitously produced a drug which may be useful in treating shock. The tactical need for such a drug remains as high as it was 10 years ago, since tactical operation in a fallout field or an area contaminated with radioactivity may be possible only to forces which possess such a drug. The yield of the program has been commensurate with its expense. A recommendation was made for an 8-year effort in drug development, total cost \$160M, if tactical requirements support the expenditure. It was also suggested that a major use of such drugs would be for Civil Defense stockpiles.

B. The present Army requirements for radiobiology research were given as the development of methods of diagnosis and therapy of radiation injury, usable in the field, i.e., simple and relatively unsophisticated, such as use of specialized antibiotics, provision of sterile capsule environments for patients, field usable methods for platelet transfusion, bone marrow transplantation, etc.

C. The Army recently closed its Division of Nuclear Medicine at Walter Reed Army Institute of Research (cost \$200K a year) and is closing down the WRAIR reactor. A TRIGA reactor at Forest Glen Section of WRAIR, owned by Harry Diamond Laboratory, is available for part-time medical use.

D. There are 65 professional officer personnel spaces in the Army nuclear medicine program, now primarily for staff, command, and clinical assignments.

#### V. Summary of DoD Programs

	<u>USAF</u>	<u>USA</u>	<u>USN</u>	<u>DASA</u>	<u>TOTALS</u>
Cost - \$ in M	0.2	1.4	0	4.12	5.72
People*	93(12)	65(11)	40(12)	202(35)	326
Major effort	Performance degradation NWER	Prophy- lactic Drug Develop.	0	Incapacita- tion NWER	

\* ( ) are military officer spaces assigned to DASA at AFRI.

#### OTHER FEDERAL AGENCY PROGRAMS

##### I. Atomic Energy Commission Program

A. Total cost, Radiobiology, and Nuclear Medicine - \$89.5M in FY 70

B. The major AEC laboratories used are: Argonne, Brookhaven, and Oak Ridge with some radiobiology programs at Los Alamos and Livermore.

C. Program Areas and Funding - FY 1970 figures.

1. Effects of radiation on living organisms: Low sub-lethal doses delivered to large populations of animals and men (patients). Responses of organ systems and tissues. \$12.4M.
2. Molecular and cellular radiobiology. Biophysics and photobiology: studies of how radiation is absorbed by living systems. \$16.3M.
3. Radiation genetics: study of damage at the chromosome level; later effects on population. \$7.5M.



4. Exposure to external and internal radiation (man and his environment); ABCC in Japan; radioisotope inhalation studies; ingested isotopes, radiopharmaceuticals. \$13.2M.
5. Combating detrimental effects of radiation: treatment studies; bone marrow transplants; pulmonary lavage. \$1.8M.
6. Marine sciences; nuclear and thermal effects; waste disposal effects on ecology. \$4.0M.
7. Land and Fresh Water Environmental Sciences: ecology studies; soil and water radioactivity; fallout studies. \$9.7M.
8. Atmospheric sciences: aerosol, dust, fallout transport; atmospheric pollution; upper air sampling. \$5.0M.
9. Nuclear Energy Civil Effects: weapons effects on civilians; countermeasures. \$1.2M.
10. Radiological and Health Physics and Instrumentation: \$7.3M.
11. Cancer and Clinical Research: tracer isotopes for diagnosis and treatment; organ transplantation usage; \$7.5M.
12. Biological and Agricultural Research: Use of radioisotopes to benefit crops and animal husbandry. \$2.8M.
13. Radiation Preservation of Foods: Food chemistry; microbiology; wholesomeness. \$0.3M in FY 71, (no support in FY 70).
14. Chemical Toxicity: of radionuclides and non-radioactive compounds. \$0.6M.

D. Construction and Capital Equipment: \$6.1M.

## II. National Aeronautics and Space Administration Program.

A. Total cost for Radiobiology Research: \$605K in FY 1970.

B. The thrust of the program is the study of the effects of particulate ionizing radiation, with primary attention paid to protons, electrons, and solar flares.

C. Except for one project (\$65K) at Ames Research Lab.; this is a contract program. The USAF School of Aerospace Medicine receives \$70K under this program.

### III. National Institute of Health Program

A. There is a radiological health research program in the Environmental Control Administration. The research effort is in the Division of Biological Effects. The work covers all radiation -- ionizing and non-ionizing. Total RDT&E funding for FY 1970 is \$2.7M.

B. An Experimental Studies Branch investigates basic and applied work with special reference to young developing tissue (fetal, in-utero), being especially concerned with low dose and low energy radiation. A new effort is being directed at radiation from television sets, microwave ovens, etc., as an in-house effort; the FY 70 support is \$1.2M.

C. Colorado State University Study of beagles given one 20 rad dose and followed for life span--\$0.7M in FY 70.

D. An epidemiology Studies Branch investigates radiation exposure levels from all sources, especially those used in medicine; the neuro-physiological and behavioral responses to radiation; genetic studies; dose-effect and threshold work; morbidity and mortality from radiation in specially selected populations. \$0.8M in FY 70, mostly on contact.

### IV. Office of Civil Defense

A. The program is mainly directed at fallout research studies; the FY 1970 budget is \$800K. There is a program in civilian casualty prediction, shelter selection, etc. which is not covered below because it is not directly germane to DoD programs or the instructions of the 29 July memorandum.

#### B. Program Areas:

1. Radiobiology: low, chronic dose delivery to large animals; fallout simulation; food and crop contamination; ecology; radiation in food chain. \$610K in FY 70.
2. Medical Research: clinical studies on burns; selection of drugs for shelter stockpiles. \$70K in FY 70.
3. Medical Planning: computer programs for medical deployment, review of AABC data. \$120K in FY 70.

C. The OCD stated that the Army anti-radiation protective drug program was of only modest interest to them. A dose reduction factor of 2 was not considered to be useful to the civilian population because nearly all shelters give at least 10 times that factor. OCD suggested that prophylactic drugs might be useful to those entering a contaminated area soon after an attack (fireman, public health people, etc.)



VI. Summary of other Federal Agency programs

A. AEC: \$89.5M effort; all aspects of radiobiology except NWER and acute and high dose studies.

B. NASA: \$605K effort; particulate radiation, chronic exposures.

C. NIH: \$2.7M effort; primarily radiological health for civilian population.

D. OCD: \$800K effort, fallout and civilian shelter work.

CONCLUSIONS AND RECOMMENDATIONS

I. What is the medical problem as related to the military mission?

A. To provide for a medically oriented and directed diagnostic, therapeutic and preventive medicine program for radiation illness as the first requirement for DoD radiobiology research.

B. Nuclear weapons effects research, after a 25-year effort, is now approaching completion. Eighty percent of the present effort in NWER should end in FY 1973.

C. Research on blast effects is no longer needed.

D. The thermal effects on skin and eye are covered in existing programs in burn and laser research.

II. What happens to on-going programs?

A. The DASA program in NWER will decline to a modest effort by FY 1973. Minimum funding (approximately \$200-300K annually) should be provided for new NWER requirements.

B. The DASA and USAF research programs in flashblindness protective materials will end in FY 72.

C. The DASA effort on blast effects will end in FY 1972.

D. The DASA program in thermal effects will end in FY 1971.

E. The Dept. of the Navy should not reinitiate a radiobiology program.

F. The Dept. of the Air Force

1. Should continue research, at USAF facilities, on NWER on combined effects of radiation and the operational flight environment. This program should end in FY 75 as a radiobiology research effort.

2. Should transfer the whole body counter-research effort to its clinical evaluation of aircrew program.
  3. Should phase out and eliminate in USAF facilities and programs:
    - a. Survivability/vulnerability radiobiology research work by FY 75.
    - b. Flashblindness parameter research in FY 72.
    - c. Low level (fallout) dose level work in primates in FY 71.
  4. All biological experimentation should be phased out at the Biophysics Division, USAF Weapons Laboratory, Kirtland AFB, New Mexico, by FY 73-74. The DASA and NASA funded programs are terminating. It does not appear that with DASA/NASA support withdrawn that the USAF could separately fund the laboratory. Computer modeling and physical dosimetry programs as part of radiobiological NWER are dwindling in importance.
  5. By FY 1975, the Air Force should have terminated all in-house ionizing radiobiology research at Aerospace Medical Division Laboratories.
- G. The Dept. of Army should:
1. Phase out the anti-radiation prophylactic drug program as follows:
    - a. In FY 71 stop all funds for compound synthesis and screening.
    - b. By FY 72 stop all funds for animal toxicity and drug effectiveness research.
    - c. By FY 74 complete final human tolerance trials, complete Phase I FDA tests, to included tests for use of the drug by flight crew personnel.
    - d. The program should be terminated as an Army effort by FY 75, having provided one or two drugs with proven utility in animals and demonstrated human tolerance. These drugs can be stockpiled if DoD desires.

III. What can AEC, NASA and HEW contribute to the DoD mission?

A. AEC

1. Will remain the leader in the field, especially for the basic research data.



2. Can provide the low dose in man (patients) effects data.
3. Can provide the required information in genetics, ecology, health physics, fallout, new clinical applications, and much of the data on therapy of sub-lethal doses (fallout doses, especially gamma radiation).

B. NASA

1. Can provide the data on particulate radiation and its acute and chronic effects.

C. HEW

1. Can provide long-term epidemiological data.
2. Can do work of DoD interest in health physics with special reference to clinical application and use of ionizing radiation.

IV. What should the DoD Radiobiology Research program be?

A. Medically oriented and medically directed toward the problems of diagnosis, therapy, and prevention that are unique to the military forces and their operating environment, with especial attention paid to acute radiation effects.

B. Military Medicine

1. Develop simple methods for field usable diagnosis and therapy of radiation illness.
2. Develop regional shielding data and methodology for unique military medical preventive medicine problems in radiobiology.
3. Develop biochemical and physiological supportive or therapeutic methods for mission completion after receiving lethal doses.
4. Complete NWER studies of current interest to the military.
5. Perform NWER studies of future interest to the military.

V. How should the DoD Radiobiology research program be organized, staffed, and funded?

A. Requirements

1. To maintain a DoD in-house capability to perform medical and radiobiological NWER work for unique or high priority DoD needs.
2. To maintain a program for the development of professional

military personnel knowledgeable in military nuclear medicine for operational, staff and command assignments.

3. To conserve people and money in an era when DoD will be limited in both, by maximum use of existing people, facilities and funds by consolidation and centralization where operationally and technically feasible.

B. Programs in the Military Departments and DASA

1. The end of nearly all radiobiological NWER by FY 74-75 indicates that weapons oriented separate radiobiology research efforts in each military department should end. The Navy has done this. The Army has eliminated its in-house capability and should phase out its extra-mural programs. The Air Force should follow suit in ionizing radiation radiobiology research.
2. Since the effort should be focused on the medical problems of radiation illness, the common factor of man as patient provides the rationale for a central facility.

C. Organization

1. The AFRRI should be designated as a common medical research facility, similar to the Armed Forces Institute of Pathology (AFIP).
2. The Secretary of the Navy should be designated as the Executive Manager of the AFRRI, in the same manner that the Secretary of the Army manages the AFIP. It is recognized that this is a reversion to the original management of the AFRRI, which didn't work, and which had to be changed to the present DASA management. It is believed that changes in the people, plans and missions involved, as well as the greater experience in DoD with single manager tri-service functions, will permit such a reorganization to function as well as has the AFIP.
3. The planning for such a reorganization should indicate that the research direction and authority will be under the control of medical staff; that the AFIP model will be followed; and that the reflection of the AFRRI program above Department of the Navy level will be to the Director, Defense Research and Engineering. DASA should retain a voice in the AFRRI program by appropriate representation in the direction of the AFRRI effort. (Details of reorganization to be determined by planning group appointed by Sec Def.)

D. The Research Program of the AFRRI should:

1. Be oriented toward preventive, diagnostic and therapeutic aspects of nuclear medicine. Fundamental research should be relevant to these applied programs.



2. Accept the remaining programs of DASA and the Air Force.
3. Respond to unique military departmental problems in radiobiology and nuclear medicine - i.e., aircraft, armored vehicles, ship and submarine problems.
4. Respond to DASA needs for NWER research on either a continuing or an episodic basis.
5. Be established, organized, directed and performed so that the AFRRI will be the radiobiology and nuclear weapons effects reference laboratory for DoD, just as the AFIP is the pathology reference laboratory.

E. Staffing of the AFRRI

1. The DoD has a continuing need for officers, physicians, veterinarians, and allied scientists who are trained in nuclear medicine and radiobiology. The elimination of military department programs is eliminating this area of biomedical research, training and practice in the military medical departments. The Committee assumed a continuing DoD need for such officers in operational, staff, and command assignments.
2. In the planning process for reorganizing the AFRRI, the Committee recommends an increase in the number of military officer health professions personnel spaces from the present 17 to at least 40. This appears to be a logical way to maintain a career cadre of such people.

F. Funding

1. Past and present military department and DASA radiobiology programs and their out-year projections:

	<u>\$ in millions</u>						
	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>	<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>
Army	1.2	1.2	1.4	1.0	1.0	1.0	1.0
Navy	0.1	0.1	0	0	0	0	0
AF	0.4	0.4	0.2	0.2	0.2	0.2	0.2
DASA	<u>4.7</u>	<u>4.2</u>	<u>4.1</u>	<u>4.1</u>	<u>4.1</u>	<u>4.1</u>	<u>4.1</u>
Total	6.4	5.9	5.7	5.3	5.3	5.3	5.3

2. Recommended programs, assuming AFRRI reorganized in FY 71

	<u>\$ in millions</u>					
	<u>FY 71</u>	<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>	<u>FY 75</u>	<u>FY 76</u>
Army	0.8	0.4	0.2	0.2	0.0	0.0
Navy (AFRRI Manager)	--	2.9	3.0	3.0	3.0	3.0
Air Force	0.2	0.2	0.2	0.2	0.1	0.0
DASA	<u>4.1</u>	<u>1.4</u>	<u>1.0</u>	<u>0.5</u>	<u>0.2</u>	<u>0.2</u>
TOTAL	5.1	4.9	4.4	3.9	3.3	3.2

3. Recommend program for the AFRRI (FY 71 funds from DASA)

<u>FY 71</u>	<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>	<u>FY 75</u>	<u>FY 76</u>
2.6	2.9	3.0	3.0	3.0	3.0

4. Final recommended total program for DoD for level effort of future funding.

<u>FY 72</u>	<u>FY 73</u>	<u>FY 74</u>	<u>FY 75</u>	<u>FY 76</u>
4.9	4.3	3.9	3.3	3.2

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TAB B

Memorandum, 29 July 1969

D.M. MacArthur to G. Tucker

Subject: DoD Research in Radiobiology

TAB C

Working Memorandum #1

Ad Hoc DDR&E Radiobiology Research

Review Committee

22 September 1969



TAB D

1. Working Memorandum #2  
Ad Hoc DDR&E Radiobiology Research  
Review Committee, 6 October 1969
2. DASA Medical NWER Program,  
Review of effort, 3 October 1969
3. Armed Forces Radiobiology Research  
Program, 3 October 1969
4. DASA Medical NWER Program,  
FY 70 Funding, 8 October 1969

TAB E

1. Working Memorandum #3,  
Ad Hoc DDR&E Radiobiology  
Research Review Committee,  
18 November 1969. Section  
on Department of Navy Program.
2. Professional Manpower Requirements,  
Radiation Health Care, Bu Med,  
16 May 1969
3. Radiation Safety Branch,  
Code 742 Billets, BuMed,  
4 August 1969



TAB F

1. Working Memorandum #3,  
Ad Hoc DDR&E Radiobiology  
Research Review Committee,  
18 November 1969. Section on  
Department of the Army program.
2. Proposed Acceleration of USA  
Program on Sulfhydryl Drugs  
15 March 1969
3. U.S. Army Medical Dept. Personnel  
Trained in Radiation Biology,  
24 October 1969

TAB G

1. Working Memorandum #3,  
Ad Hoc DDR&E Radiobiology  
Research Review Committee,  
18 November 1969. Section on  
Department of the Air Force Program
2. USAF Briefing for DDR&E  
Radiation Biology Review  
Committee, 23 October 1969



TAB H

Atomic Energy Commission  
Biology and Medicine Program  
Fiscal Years 1970 and 1971

TAB I

Department of Health, Education  
and Welfare; Division of Biological  
Effects Program, 30 October 1969



TAB J

Office of Civil Defense

Radiobiology Program

3 November 1969

TAB K

National Aeronautics and  
Space Administration  
Radiobiology Program  
14 October 1969



TAB L

Memorandum, 23 September 1963,  
Director, DASA to Surgeon General  
Department of Navy

Subject: Command Relationships  
Armed Forces Radiobiology  
Research Institute

TAB M

Department of Defense Directive  
5120.30, 6 August 1953,  
"Armed Forces Institute of Pathology"