

F. A. S. PUBLIC INTEREST REPORT

Formerly the FAS Newsletter

SPECIAL ISSUE:

MULTIPLE AIMPOINTS

Vol. 31, No. 7

September, 1978

MAP OR SALT?

We regret to conclude that, unless SALT III features substantial reductions in land-based missiles, arms control will have been a failure in controlling offensive weapons developments.

The record of failure in the control of offensive nuclear weapons is already continuous and consistent. First fissionable material became too available to control, then nuclear bombs, then ICBMs could not be precluded, and then MIRV went beyond control. Now we count overall numbers of delivery vehicles, losing sight of the fact that the uncontrolled warheads are what destroy people and property. Recently, the big U.S. "success" in arms control negotiations was the right to pioneer with cruise missiles!

The last straw in this depressing history seems likely to be MAP — multiple aimpoints. The idea here is to multiply the aimpoints at which the other side would have to fire by increasing the points from which our own land-based missiles could be launched: a continuous shell game would be maintained in which missiles were furtively moved from one aimpoint to another so as to make it necessary for the other side to waste missiles by firing at each aimpoint.

The growing vulnerability, at least on paper, of our 1,054 fixed site land-based missiles, has encouraged the notion. Further encouraging it has been the apprehension of military strategists that the Soviet ability to destroy our land-based missiles would give that country some kind of political advantage, notwithstanding the fact that its attack would result in a totally devastating response from 5,000 sea-based warheads and hundreds of U.S. strategic bombers.

At first the Administration thought in terms of placing the new missile — to be called MX — in

underground trenches. But the trenches were too vulnerable to an attack, too expensive to dig, required too much of the environment, and had no political support. Now the plan is simply to multiply semi-hardened shelters, either horizontal or vertical, and then to construct perhaps 5,000 aimpoints for 250 new missiles.

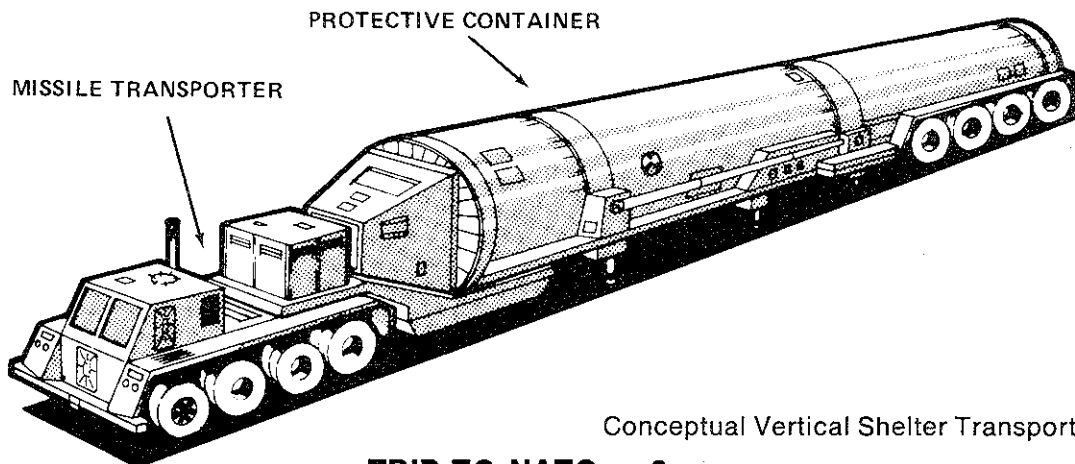
If the missiles to be bought were not so greatly improved as they are, their procurement might not threaten the Soviet land-based missile force and, in principle, at least, the land-based missile race might terminate with 1,300 U.S. missiles (of which 250 had 20 holes per missile) and 1,400 Soviet land-based missiles in fixed sites.

Unfortunately, the 250 MX missiles are planned to have pinpoint accuracy (landing within a football field length 50% of the time) and to have five times the carrying capacity of the newest Minuteman missiles. They would carry 12 silo-killing warheads on each missile, or enough to devastate the entire Soviet land-based force itself. As a result, the Soviet Union can be expected to increase the number of missiles in reaction, and for protection, or develop a MAP system of their own.

Worse, through Soviet subdivision of their MIRVed warheads into still more multiple warheads, it might well get the ability to destroy all the empty holes at once, making the shell game pointless or forcing it to endless growth.

As a result, suitable SALT limitations would be necessary to restrain the pressures on both sides to enlarge and expand their land-based missile systems.

—Continued on page 2



Conceptual Vertical Shelter Transporter/Emplacer

Continued from page 1

But since the method of MAP requires secrecy, it is quite unclear how SALT verification could determine how many holes were full. And even if the Soviets accepted some unusual method of verification for our system, it is not clear that our greater nervousness would make it possible for us to accept the same method in the Soviet Union.

The result is almost sure to be, therefore, increased incentives on both sides to keep adding more missiles, more warheads, and/or more empty holes. As a result, even the number of delivery vehicles will be beyond control, and the last barrier to an uncontrolled offensive arms race would seem to have been breached.

And that is by no means all. Both sides would then be subject to what has been called "reciprocal fear of surprise attack" in which each recognizes that — at least insofar as land-based missiles are concerned — it is better to fire first than second. They would thus be encouraged to fire sooner rather than later, and to set their missiles to be on warning of attack rather than to wait for actual attack. The possibilities both for undesired escalation and for totally unwanted war would rise sharply. In addition, with the next crisis, both sides could be expected to rapidly fill up all the existing holes with more missiles; this is the so-called "breakout" problem.

The alternative is obvious. Both sides have already long ago acknowledged, and discounted, the future vulnerability of land-based missiles by moving to missile-firing submarines. They would do better to scale down the number of land-based missiles than to scale them up. The scaling down will not decrease the vulnerability of the land-based missiles, but it will decrease their significance in the strategic balance, and it will undermine the emphasis which some place on scenarios in which one side destroyed the other's land-based missiles as a show of force.

The usual objection is the alleged unwillingness of the Soviet authorities to accept diminutions in their land-based force, which constitutes most of their strategic force and their primary one. We ourselves have latent uneasiness about giving up part or all of our land-based missiles.

But the alternative for both sides is an end to comprehensive SALT agreement on offensive weapons and much greater expenditures. Hence a major effort is justified. In addition, without substantial disarmament, the SALT talks have nowhere to go. The P.R. cream has already been skimmed off the top with "caps on the arms race" and overall limits. The world is now waiting for reductions — and there is nothing else ripe for reductions now except the land-based missiles.

Therefore, we believe the Administration and the Soviet Government should make an agreement in principle to go rather far down the road of land-based missile reductions, which agreement could then be implemented in subsequent stages.

Finally, if there is concern about the vulnerability of the residual land-based missiles, why not consider prohibiting new holes but not demolishing old ones.

With reductions in the missiles, and flight test bans to prevent multiple warheads being retained on land-based missiles, each side could, in time, have a secure land-based force which would be shuttled around to existing holes. Here we would have a MAP scheme without expansion, limited by SALT.

In any case, we think the turning point for strategic SALT now lies with the disposition of land-based missiles. Both nations can go forward or back, but they can no longer equivocate. We are either going to move toward the elimination of land-based missiles or we are going to have to admit that SALT has failed to control offensive weapons agreements, and that the arms race is back in full swing. □

— Reviewed and Approved by the FAS Council

FAS

Chairman: GEORGE W. RATHJENS

Vice Chairman: JEROME D. FRANK

Secretary: JOHN T. EDSALL

Treasurer: FRANK VON HIPPEL

Director: JEREMY J. STONE

The Federation of American Scientists is a unique, non-profit, civic organization, licensed to lobby in the public interest, and composed of 7,000 natural and social scientists and engineers who are concerned with problems of science and society. Democratically organized with an elected National Council of 26 members, FAS was first organized in 1946 as the Federation of Atomic Scientists and has functioned as a conscience of the scientific community for more than a quarter century.

SPONSORS (partial list)

- | | |
|-----------------------------------|-------------------------------------|
| *Christian B. Anfinsen (Biochem.) | *Willis E. Lamb, Jr. (Physics) |
| *Kenneth J. Arrow (Economics) | *Wassily W. Leontief (Economics) |
| *Julius Axelrod (Biochemistry) | *Fritz Lipmann (Biochemistry) |
| *David Baltimore (Microbiology) | *S. E. Luria (Biology) |
| Leona Baumgartner (Pub. Health) | Roy Menninger (Psychiatry) |
| *Paul Beeson (Medicine) | Robert Merton (Sociology) |
| *Hans A. Bethe (Physics) | Matthew S. Meselson (Biology) |
| *Konrad Bloch (Chemistry) | Neal E. Miller (Psychology) |
| *Norman E. Borlaug (Wheat) | Hans J. Morgenthau (Pol. Science) |
| Anne Pitts Carter (Economics) | *Philip Morrison (Physics) |
| *Owen Chamberlain (Physics) | *Robert S. Mulliken (Chemistry) |
| Abram Chayes (Law) | Franklin A. Neva (Medicine) |
| Morris Cohen (Engineering) | *Marshall Nirenberg (Biochem.) |
| Mildred Cohn (Biochemistry) | *Severo Ochoa (Biochemistry) |
| *Leon N. Cooper (Physics) | Charles E. Osgood (Psychology) |
| *Carl F. Cori (Biochemistry) | *Linus Pauling (Chemistry) |
| Paul B. Corneily (Medicine) | Gerard Piel (Sci. Publisher) |
| *André Courmand (Medicine) | George Polya (Mathematics) |
| *Max Delbruck (Biology) | Oscar Rice (Physical Chemistry) |
| *Renato Dulbecco (Microbiology) | *Burton Richter (Physics) |
| John T. Edsall (Biology) | David Riesman, Jr. (Sociology) |
| Paul R. Ehrlich (Biology) | *J. Robert Schrieffer (Physics) |
| *John F. Enders (Biochemistry) | *Julian Schwinger (Physics) |
| *Paul J. Flory (Chemistry) | Herbert Scoville, Jr. (Def. Policy) |
| Jerome D. Frank (Psychology) | Alice Kimball Smith (History) |
| John Kenneth Galbraith (Econ.) | Cyrl S. Smith (Metallurgy) |
| Richard L. Garwin (Physics) | Robert M. Solow (Economics) |
| Edward L. Ginzton (Engineering) | *William H. Stein (Chemistry) |
| *Donald A. Glaser (Physics-Biol.) | *Albert Szent-Györgyi (Biochem.) |
| *H. K. Hartline (Physiology) | *Howard M. Temin (Microbiology) |
| Walter W. Heller (Economics) | James Tobin (Economics) |
| *Alfred D. Hershey (Biology) | *Charles H. Townes (Physics) |
| Hudson Hoagland (Biology) | *Harold C. Urey (Chemistry) |
| *Robert W. Holley (Biochemistry) | *George Wald (Biology) |
| Marc Kac (Mathematics) | Myron E. Wegman (Medicine) |
| Henry S. Kaplan (Medicine) | Victor F. Weisskopf (Physics) |
| Carl Kaysen (Economics) | Jerome B. Wiesner (Engineering) |
| *H. Gobind Khorana (Biochemistry) | Robert R. Wilson (Physics) |
| George B. Kistiakowsky (Chem.) | C. S. Wu (Physics) |
| *Arthur Kornberg (Biochemistry) | Alfred Yankauer (Medicine) |
| *Polykarp Kusch (Physics) | Herbert F. York (Physics) |

NATIONAL COUNCIL MEMBERS (elected)

- | | |
|-----------------------------------|------------------------------------|
| Bruce Ames (Biochemistry) | Victor Rabinowitch (World Devel.) |
| Lipman Bers (Mathematics) | Leonard Rodberg (Pol. Science) |
| Harrison Brown (Chemistry) | Arthur H. Rosenfeld (Physics) |
| Nina Byers (Physics) | Patricia Rosenfield (Env. Health) |
| Britton Chance (Chemistry) | Carl Sagan (Astronomy) |
| Geoffrey Chew (Physics) | Joseph L. Sax (Environ. Law) |
| Thomas Eisner (Biology) | William Shurcliff (Physics) |
| Morton H. Halperin (Pol. Science) | George A. Silver (Medicine) |
| Denis Hayes (Environ. Policy) | Frank von Hippel (Physics) |
| Myra Karstadt (Law-Biochemistry) | Alvin Weinberg (Physics) |
| Daniel Koshland, Jr. (Biochem.) | Robert H. Williams (Energy Policy) |
| Leonard Mecker (Law) | Archie L. Wood (Defense) |

*Nobel Laureates

The FAS Public Interest Report is published monthly except July and August at 307 Mass. Ave., NE, Washington, D.C. 20002. Annual subscription \$20/year. Second class postage paid at Washington, D.C. Copyright © 1978 by the Federation of American Scientists.

STRATEGIC IMPACT STATEMENT: MX MULTIPLE AIMPOINT PLAN

On July 19, 1978, the Department of Defense released an Environmental Impact Statement (EIS) on the MX missile. Earlier, the Arms Control and Disarmament Agency had released on July 2, 1978 an Arms Control Impact Statement (ACIS).

Together these statements provide enough information to permit a survey of the strategic impact of MX development.

The Underlying Situation

The underlying DOD idea is to supplement or replace 1,054 land-based missiles in fixed vertical silos with about 250 MX missiles which would be in locations disguised by random movement between various aimpoints. The total number of aimpoints would be about 5,000, requiring the Soviet Union to fire at 20 times the number of points as had emplaced missiles. (The number 20 could be as small as 10 or as large as 40.)

As far as the environment is concerned, the underlying choice is between "point" and "area" security. In either case, about 5,000 square miles would be required for the emplacement of the 5,000 aimpoints. (This is the equivalent in land area of a square with 70 miles on a side or, put another way, four times the size of Rhode Island, or equal to the size of the state of Connecticut.) If area security is eventually deemed necessary, the entire area would be fenced and would become unusable for agricultural, recreational, or extractive activities. Point security, by contrast, requires only 20 square miles to be used by the defense forces while the remainder of the 5,000 square miles, while still under military control, with structures excluded, could be used for recreational and agricultural activities. The land would be needed for 20 or 30 years, DOD suggests, but it could obviously be longer.

The land chosen could come from any one of seven sites. California, Nevada, and Arizona each have one site. Two sites overlap both Texas and New Mexico, and one is in Nebraska, Kansas and Colorado. The Department of Interior owns most of the property of the sites outside of Texas. But of the sites in Texas, most of the land is in private hands.

DOD uncertainty on this question of point versus area security reflects a weakness in the entire scheme. This is the first time the U.S. has attempted to base an arm of its strategic force on deception. By its nature deception can be penetrated and there is, inevitably, residual uncertainty as to the ability of the Soviet surveillance capability to know where the missiles will be at any given time and to target them efficiently.

The EIS is revealing in saying that:

"Additional deceptive methods, such as use of decoys resembling the missile in all observable features, may therefore be required." (p. I-9)

The MX missile would be carried from point to point in a canister from which it could be "popped up," with its ignition of the rocket motor taking place after it was in the air. Special transporter vehicles could move the missile from place to place in a way that disguised whether a missile and canister were really aboard (i.e., deceptive transporter movements would be involved). Because the missile, at 190,000 pounds (and 70 feet long), is too heavy to move over public roads, it must be broken down into stages for transportation and assembled at the de-

ployment site.

It would take five years to construct the 5,000 aimpoints and the cost of construction would be between \$3 and \$4 billion according to DOD, or \$600,000 to \$800,000 per aimpoint. Surface area of about 1/6 the size of Rhode Island would be disturbed.

According to *Aviation Week & Space Technology* (June 19, 1978) the full cost of 10 years of developing, deploying and operating a vertical shelter-based MX deployment over a 10-year period is \$18 billion, with another \$2 billion if small area security systems are used.

The Arms Control Impact Statement reveals that MX would carry about 12 warheads ("perhaps three times" as many as Minuteman III) with greater accuracy than MM III will achieve even with its improved guidance system. This means about 100-meter accuracy, or .05 miles. The ACIS cautions that the number of missiles and their deployment might vary over time depending upon costs and the Soviet threat.

Strategic Analysis

There are two arms control levels upon which this proposal can be analyzed and both produce unfavorable conclusions:

Level I (Fundamentalist): The future vulnerability of land-based missiles was foreseen and adjusted for when the United States began building Polaris submarines, and further reinsured when the warheads on those submarines were multiplied by a factor of 10, to 5,000 warheads, through the introduction of MIRV. From this point of view, and in light of the existence of bomber forces and the invulnerability of submarines, the Minuteman land-based force, or any other land-based force are quite unnecessary. Eliminating them would tend to remove the U.S. from the line of fire of Soviet strategic forces should counterforce wars become conceivable.

This point of view rejects the argument that a disparity in land-based missiles would have any political significance in light of the other existing disparities in the strategic situation — warheads on submarines in our favor and anti-submarine warfare capabilities, also in our favor. And it believes that 5,000 sea-based warheads are far more than enough to deter attack from a nation with at most 200 cities.

Level II (Arms Race Manager): MX has both an offensive and a defensive side. The multiple aimpoint aspect is defensive. But the new missile with many multiple warheads and high accuracy is offensive. The ACIS recognizes this by talking of the threat it poses as an "incentive".

"The MX development program itself may provide additional incentives for the U.S.S.R. to agree to reductions in MIRVed ICBM force levels and/or qualitative restrictions on ICBMs in SALT III." (p. 17)

What ACIS means is that MX will threaten to destroy so many Soviet land-based missiles, with so few MX launchers, that the Soviet Union, with 80% of its forces composed of land-based missiles, and fearing our first strike, will see its land-based force destabilized.

Under these circumstances, Soviet planners are, unfortunately, unlikely to agree to dismantle land-based missiles since the agreement would dismantle parts of their

primary strategic force in return for reductions in our secondary strategic force.

The Soviets are more likely, instead, to either: (a) buy more missiles, or put additional warheads on each missile; or (b) let their control of firing the missiles devolve upon lower ranking officers and base that control rather more on technical warning of in-flight oncoming attacks.

The latter policy would represent a dramatic increase in the danger of losing the entire United States to some future technical mix-up. The U.S. is afraid, ourselves, to implement firing on warning for just such reasons.

The EIS says this about U.S. firing on warning:

"Potential vulnerability problems could be minimized by adopting a policy of launching the ICBM force before Soviet attacking weapons would arrive and detonate. This is only an option under present strategy. The decision to launch would have to be made rapidly based on information from our warning sensors. This policy would only be adopted with greatest caution, for a launch based on inaccurate warning assessment could precipitate a destructive nuclear exchange in error and must be avoided."

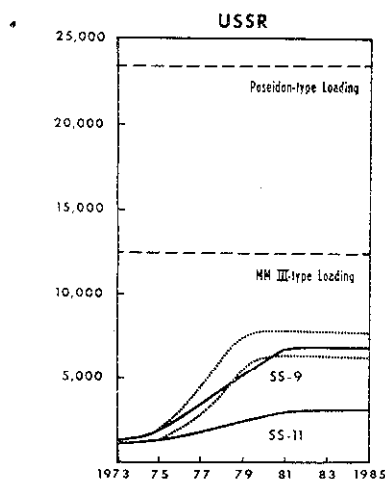
(p. I-6)

The policy of buying more missiles reveals the open-ended commitment, and losing struggle, that would result from trying to develop enough holes to absorb all Soviet warheads. In the first place, although the present discussion involved projections of 5,000 aimpoints and approximately 5,000 Soviet land-based warheads, the limits on Soviet warheads — with existing missiles only — is much higher as the DOD graph below shows.*

With the loadings we use on Minuteman III missiles (perhaps 200-kiloton warheads), the Soviet throw-weight could accommodate 13,000 warheads. With the 50 kiloton warheads we use on Poseidon missiles, 23,000 warheads could be emplaced. If, therefore, the proposed system cost of \$18 billion were multiplied by an expansion

*The tunnel method of housing MX seems less likely to be chosen now. Because of high construction costs, the entire tunnel would not be hardened and would instead be composed of 20 to 25 hardened aimpoints connected by unhardened tunnels. Here the total number of aimpoints is likely to be 10 to 11 thousand rather than 5.

Potential Soviet ICBM MIRVs



factor of 4.3, total costs might be in excess of \$70 billion. But such expansion would be even more difficult than this implies since the land use requirements would become intolerable. DOD has seven sites which it considers feasible, and it would be moving toward the use of most of them.

It could well be argued that such a high number of aimpoints would be quite unnecessary since the inevitable misses and uncertainty in missile reliability would leave large absolute numbers of missiles intact. (For example, a 95% kill factor would still leave $.05 \times 23,000 = 1,150$ holes, or 60 missiles.) But one could well argue today that tens of missiles would likely survive without MAP; the problem is that DOD wants MX and is therefore unwilling to rely upon uncertainties which, were they supporting its position, they would readily tolerate.

Since the MX being installed would provide 2,500 silo-busting warheads, in addition to the 2,000 Minuteman warheads, the U.S. would be strongly encouraging the Soviet Union to do more than build more warheads per missiles. It would be encouraging it to build more missiles also. In this case, the missiles built, with their additional warheads, would further undermine the U.S. multiple aimpoint defense. For example, the Soviet Union might double its land-based force from 1,400 to 2,800 forcing a doubling of the MAP system.

It is argued that the cost-exchange ratio involved would be undesirable to the Soviet Union with the additional Soviet warheads produced by building more missiles being more expensive than the additional 20 U.S. holes (with their single MX missile and transporters). This is both unlikely, and irrelevant if true.

It is unlikely because the Soviet missile may be considered to be of comparable expense with the U.S. MX missile. But the Soviets do not need to build the 20 extra holes for each missile! And yet the Soviet missile can carry the warheads necessary to cover all these holes.

But this kind of calculation, though often invoked, is irrelevant anyway. This is because the Soviet authorities would not be buying the missiles with an eye to cost-exchange ratios, but rather buying them for deterrence, with an eye to the ability of MX to savage their missile forces. In this case, the relative costs to ourselves, and to them, are simply not part of the Soviet calculation.

The Necessity for SALT to Buttress MAP

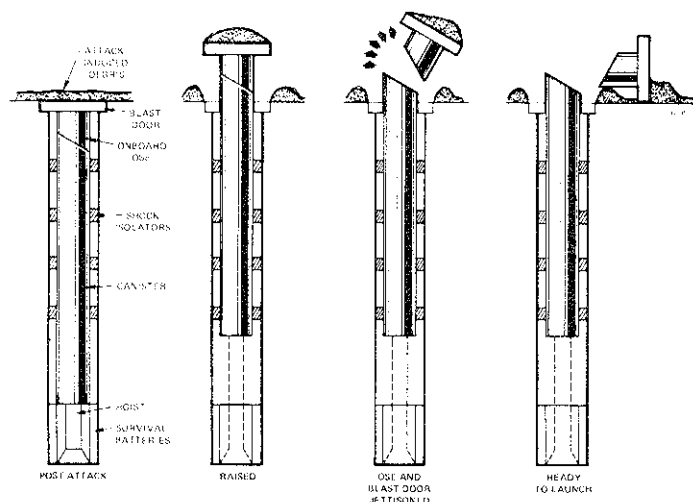
In principle, it is possible that a SALT agreement could hold the Soviet force fixed while our empty holes multiplied to a suitable extent. This has, however, a number of problems that seem decisive:

1. A method would have to be found which distinguished empty holes from missiles, or else the SALT agreement could not be negotiated with the Russians. Unfortunately, U.S. plans seem to call ever more stringently for deception and decoys that make it almost impossible for the Soviet Union to distinguish empty holes from missiles.

2. The method would have to be usable by the Soviets. In short, it would have to rely upon some inspection method which they would be willing to use and we to trust. This makes the development of a suitable technique much more difficult.

3. The empty holes lend themselves to the problem of "breakout" — the temptation on one or both sides to break

Conceptual Vertical Shelter Launch Sequence



out of the agreement and fill the holes with missiles. Indeed, if production numbers of missiles cannot be monitored with sufficient assurance, the breakout and deployment could be swift. While such a breakout would not affect the strategic balance in military terms, it might be seen as politically disturbing by those who take these things sufficiently seriously to call for MAP in the first place.

4. In any case, the SALT agreement seems unlikely to limit the numbers of warheads on already emplaced missiles, hence one could have the problem associated with 23,000 warheads in either case. Flight test bans might assist this situation in some way, but these have not, so far, been susceptible to negotiation.

If War Occurs

The multiplication of aimpoints draws fire in large quantities to the sites where the missiles are located. In the event of general nuclear war it would be difficult to terminate hostilities short of a phase in which each side exhausted itself in attacking, at least, the land-based missiles of the other. The MAP program would vastly increase the number of warheads detonated.

Certainly the number of sites downwind of which there would be fallout problems would increase as the missiles were spread around the country. Also, the more difficult it was made to dig out the missiles, as in trenches, the more likely the Soviet planners would be to use ground bursts which would increase local fallout over the air burst case.

Unfortunately, the EIS says little about the implications of MAP in the event of war.

Conclusion

The EIS statement takes the simplistic view that: "If we have more aimpoints than they have attacking weapons, we can ensure a sufficient retaliatory capability would survive an attack by their entire inventory of weapons — which increases the deterrent value of our ICBMs."

But it nowhere indicates the real likelihood that even its premise can be maintained. If, as seems likely, the Soviets are forced by their own strategic requirements to beef up their deterrent in response to the silo-killing ability of MX, they will automatically, and as a concomitant of that action, force the U.S. MAP scheme to expand continually. The 5,000 MAP points costing per-

haps \$20 billion (without cost overruns) would then continually rise in number and cost.

Furthermore, the notion that deterrence will be strengthened overlooks the fact that deterrence against deliberate attack is already about as secure as it can be. What remains is the likelihood of a war that escalated far out of control of either side. In this case, the existence of the MAP scheme may only draw fire to the United States and in larger quantities than would otherwise have occurred. Basically, the MAP scheme tries to maintain the significance of an asset that is obsolescing (land-based missiles) and, in so doing, it increases the chance that this asset will become a focus of attack rather than decreasing it.

MAP is both inadequate and unnecessary as a defensive scheme. Inadequate since, if one accepts the premises of its proposers that something must be done about throw-weight imbalances, and an appearance of Soviet ICBM superiority, this does not rectify the balance. But it is unnecessary if one does not accept these highly political premises.

As an offensive scheme, MAP is as likely to encourage the Soviet system to build more weapons much as their buildup is encouraging ours. It will complicate SALT control of ICBMs to the breaking point and virtually ensure a long and expensive land-base missile race between the superpowers. □

IS MILITARY RECOMBINANT DNA COVERED BY TREATY?

The question has arisen whether the Convention on Biological Weapons will prohibit organisms manipulated by recombinant DNA techniques, and non-lethal toxic agents that alter the biochemistry of the body. These and other related questions were discussed by about a dozen specialists convened by the MIT Program in Science and Technology for International Security.

The attendees, who included Matthew Meselson, Walter Gilbert, David Baltimore, Bernard Feld, and Kosta Tsipis, concluded that the Convention on Biological Weapons quite adequately prohibits *all* biological weapons including, in particular, those amended by recombinant DNA mechanisms.

Quite apart from their legality, the group discussed the

possible enhanced utility of recombinant-DNA-aided biological warfare. It was concluded that, *a priori*, there was little reason to suspect that recombinant DNA techniques would produce biological weapons that would differ in a "militarily significant way from natural pathogens and toxins."

A three-page summary of their conclusions is available from Professor Kosta M. Tsipis at MIT. □

FEDERATION OF AMERICAN SCIENTISTS FUND EXPANDS

In August, the FAS Fund purchased the townhouse at 305 Massachusetts Avenue, adjacent to its present headquarters at 307 Massachusetts Avenue, N.E., to provide both for possible future expansion and to provide possible future income. The Fund had not the liquid resources necessary for such a purchase but mortgaged its headquarters building in such a way as to secure the necessary funds. (This was possible because since 1974, when FAS members contributed to the purchase of the FAS building, the building has doubled in value.)

The FAS Fund rented the new acquisition to the public interest group "New Directions" on a five-year lease in such a way as to carry the mortgage.

The Fund is now considering a campaign to defray the costs of this new mortgage, so as to make the rental income available for the maintenance of a full-time staff officer for the Fund. In effect, a "chair" would thus be endowed in perpetuity and the income from 305 Massachusetts Avenue, increasing as it would with time and inflation, would provide a constant real income for a staff person. Persons interested in assisting in, or encouraging, this possibility should call or write Jeremy J. Stone, Director. □

A DISSENT

The June, 1978 Report endorsing the Comprehensive Test Ban discussed its likely effect on the arms race in general and the weapons laboratories in particular, and contained this sentence:

"We dispute the necessity, so deeply felt by the present leaders of our two weapon design laboratories, that the weapons laboratories must be kept open indefinitely."

Council Member Alvin Weinberg, who was not in the country when the editorial was approved, took issue with the formulation in this sentence saying:

"The present peace still hangs on the doctrine of mutual deterrence. This is a thin sort of reed, yet it is the best we have. Under the circumstances, I see no merit in reducing our weapons capability, nor in reducing our capacity to estimate weapons effects and assessments of the effectiveness of civil defense — all of which, I believe, would happen should the weapons laboratories be closed. But my main reason for objecting to the statement is that it implies closure of the weapons laboratories sooner rather than later. So drastic an action requires much more examination of the facts and analysis of the implications than have been put in evidence."

VISIT TO NATO

In June, NATO invited a delegation from the Council on Foreign Relations for an all expense paid tour of one week; at the invitation of the Council on Foreign Relations, FAS Director Stone joined the delegation and provided these notes and impressions.

The NATO political headquarters is in Brussels, where the delegation met with General Zeiner Gundersen, Chairman of the NATO Military Committee that supervises the operations of its Supreme Allied Commanders. (These are General Haig — Supreme Allied Commander, Europe, and Admiral Ike Kidd, Supreme Allied Commander in the Atlantic, plus a Channel Commander). We met also with a number of Assistant Secretaries of NATO.

The briefings were standard. The Soviet Union was spending 11-13% of its GNP on defense. When observers note that this amounts to the sum being spent by the U.S. (with half the percentage spending but twice the GNP), it is explained that the Soviets pay less for manpower (perhaps 15% rather than 50%, and hence are able to do more with it). Much emphasis is placed upon the new mobile SS-20 intermediate range missiles which will have MIRV and accuracy. But it is not explained how these will make any important difference since the targets to be covered by the SS-20 are already covered by Soviet MRBMs and IRBMs.

Much is made of the fact that the Soviet forces are greatly improved over 1968. The Soviet Navy has since grown from being a coastal force only, and the range and weapon load of combat aircraft have improved. But later it is conceded that Brezhnev would be right about the Soviets not having increased the numbers of tanks or personnel by even one if the base year is taken to be 1973.

Here, and later at West German headquarters also, there is open consternation that the arms embargo on Turkey, which followed the Greek-Turkish confrontation, might lead to the loss of Turkey in NATO.

There is skepticism about detente, and the phrase "balanced detente" is called for. One gimlet-eyed General quotes a Scandinavian saying: "When the Tsar of all the Russians talks of brotherly love, it is time for decent people to look to their guns." He thinks the Moscovite Empire has, historically, always been expanding.

NATO nations often complain that intelligence information is not shared. But NATO officials are not slow to admit that NATO leaks "like a sieve" and that the degree of sharing of intelligence must reflect this hazard.

There is a fear that the Soviets now have "conventional superiority" — in fact, this is an old and standard NATO fear. More precisely, it is felt that the West is relatively better off conventionally than it was in the 1950s, but not so well off as it was in the mid-1960s. Special concerns focus on electronic war ("No doubt here about Soviet superiority") and about the greater preparedness of the Soviets in chemical warfare. (But, later, a West German General in the field advises that he doubts the Soviets will use chemical weapons because the wind normally blows from West to East and would blow the chemicals back on them.) If the chemicals are used, the assumption is that nerve gases would be used in an effort to open a front and

would then dissipate, permitting the attacking army to pass through the hole formed by the chemicals.

In maintaining interest in NATO among the Europeans, NATO political officials observe that the problem is that, "While we take the credit for the fact that nothing has happened, we cannot prove that NATO is responsible." They would like an "earnest of Soviet intent," which is usually given as "progress in the Mutual Balanced and Force Reduction talks" (MBFR). Meanwhile, Brezhnev is complaining that the West has not sufficiently acknowledged that the Soviet Union has now accepted the Western position of negotiating a ceiling on force levels in Europe rather than its earlier desire for percentage reductions. Complicating the negotiations is the fact that the two sides disagree by 100,000 men on how many troops the Russians have in Europe.

It is said that the Soviet forces have "shifted in their configuration from defense to offense formations," but later discussion with other officers indicates that this means only that Soviet offensive capabilities have grown. The phrase apparently does not indicate a change in the disposition and placement of the forces.

Economic officials concede that the Soviet rate of growth is declining from 5.8% in the fifties to 3.8% since 1974. It is suffering from manpower restraints (population growth is in non-Slavic peoples), significant trade deficits, energy constraints, and the perennial agricultural problems. Even its military advances are not always applied to the forces in being. It is hard to know how long the Soviet Union would keep up this rate of spending. Technology transfer limitations would not have decisive effects on their plans, but the sale of grain could, of course, make a difference.

Force Goals

NATO challenges its member nations by setting force goals which each is obligated to try to meet. It turns out that they are never met, by any nation, and that NATO is unwilling to go public in describing the shortfalls lest it only antagonize its members.

Neutron Bomb

In Brussels and elsewhere, it is learned that the neutron bomb would only transform about 20% of Western nuclear warheads. The bombs would be fired 100-200 at a time — no limited attack this.

The NATO military headquarters is at Mons where the delegation met with SACEUR Commander Haig and four of his most senior advisers. The spirit here is not one of expecting an attack in the short run, but of political-psychological "climatic" problems among allies. Fears are expressed of excesses of introspection and unnecessary concessions of parity in the face of relentless Soviet force growth, (which now turns out high quality stuff) and the consequent possibility of losing qualitative advantage.

Africa is as much of a preoccupation here as Europe. Concern is voiced about Soviet providing of arms abroad (\$4 billion last year). (Our own arms exports in 1976 totaled \$5.2 billion.) And the line is taken that America ought to recognize the difference between "totalitarian regimes" which it should oppose and the "authoritarian regimes" which lack a world ideology and should get a different treatment.

Visit to the Belgian Corps

After the failure of the attempt at neutrality in the

1930s. Belgium joined NATO. A Belgian briefer commented simply, but poignantly, on the importance of America for the "survival of liberty." One is reminded of the great difference in perspective between Americans on the one hand and those whose countries are nearer the front line of the division of Europe.

The Belgians feel far better off than they were ten years ago, but need more rounds of ammunition, a new armored personnel carrier, and armed helicopters for anti-tank operations. They are encouraged by the Reforger effort to speed up reinforcements but are reconciled to having to fight three weeks without reinforcement and think and hope they can.

Their exercises, and those of the Germans, are limited by the costs of paying for the damage of the operations. One corps alone can cost \$500,000 in damage payments in an exercise.

The Belgian Army is attractive and the officers seem to have somewhat the style of interaction of the Israelis, informal without excessive consciousness of rank. They put on a demonstration showing how tanks, coming upon a company of entrenched enemy, were able to maneuver while friendly infantry outflanked the blocking force. (But the outflankers charged the dug-in foxholes in a fashion that military observers from the visiting delegation considered suicidal).

To the nonmilitary observer, one is struck by the extent to which mechanization has turned almost everything into a tank-like vehicle. Few will walk to the next war; the battlefield environment is just too hostile for the infantryman. But conditions inside the tanks and armored personnel carriers, and missile firing vehicles are difficult. Traveling in a missile firing vehicle, one saw little more room for the crew than is possessed by astronauts in their space capsules. The crews plan to stay sealed up within the vehicle for up to two days! The heat and bouncing must quickly result in enormous fatigue.

The tanks move at very rapid speed, upwards of 50 miles per hour if necessary, but vision is restricted.

Ministry of Defense (MOD), Federal Republic of Germany

Where the Belgians are somewhat informal, the Germans continue to emphasize shows of discipline. The body language of headquarters adjutants continually repeats "at your service" with inaudible heel clicks and slight bows. Everything is in its place and organized to the minute.

Briefings were provided by the highest officials in intelligence and political-military affairs. The major problem, I felt, arises when one learns that NATO expects 48 hours of warning but needs 48 to 72 hours to get itself together. And this leaves no time for getting the warning transmitted into an alert! It seems that the apprehensions expressed in the FAS Public Interest Report of May, 1977, on the need for better alerting procedures were correct.

One General says of SALT that, "If Soviets make optimal use of the proposed SALT treaty, something will arise that could not be called parity." But later another General denies this was said, and, it seems, the Germans are somewhat under wraps in what they feel they can say on SALT.

As is traditional, the Germans strongly support "forward defense" lest the most populated part of Germany be taken at the outset. They show the usual enhanced interest in nuclear deterrence and low nuclear thresholds. Today,

this takes the form of wanting cruise missiles. In response to objections that Americans were unlikely to give the Germans cruise missiles that could hit Moscow, one spokesman hastened to say that the missiles could remain under American control. Another indicated, however, that the control would be two-key, as with other nuclear systems, and that the systems that could fire the nuclear weapon might, in some cases, be in German hands.

Much is said about the importance of "maintaining the coherence of the NATO triad" by which is meant the links between the conventional forces, the tactical nuclear weapons and the strategic nuclear weapons of the alliance. The links to which it refers are what others might call "domino relations." Specifically, the Germans want to be sure that a loss on the conventional level cannot avoid triggering the tactical nuclear weapons and this, in turn, the strategic weapons.

On the neutron bomb, one gets the impression that the Germans are proposing that the President's decision on going ahead with the neutron bomb should turn on whether the Soviets agree to withdraw a tank army.

We discussed the question of a possible East German revolt with its frightening implications for the possibility of a Soviet mobilization on the NATO border. One German General scoffed at the possibility that the East German military would ever revolt. He did not think that there was much interest in unification left. This was because only Germans of 43 and upwards were even ten years old when Germany was divided and because Germany was only 100 years old and nationalism was weak, e.g., he saw no sign of interest in Austria for reunification. (But German intelligence officers disagreed and felt that there did remain a strong East German tie.)

The General said the Russian army was more likely to defect than the German, and that German soldiers, when ordered to take a railroad station were so disciplined that they would buy tickets first. (He was evidently referring to the Naval Mutiny in Kiel.) (But the same officer indicated that, if NATO did not sound the alert in time, German military officers might just alert their forces anyway. This was later flatly denied by another German General.)

The Germans have purposely arranged the "layer cake"



Stone being instructed on the use of the Belgian anti-tank missile.

deployment of foreign troops in Germany in such a way that an enemy attack would have to kill nationals from at least three different NATO states.

The United States Seventh Army

The U.S. contribution to NATO is, in essence, the 7th Army, which is commanded by four-star General George S. Blanchard. As commander also of the Central Front (CENTAG), he and his multinational staff briefed the delegation.

It appears that the Russians can attack, with 56 to 60 divisions, 72 to 96 hours after they alert their Soviet commanders. And, about eight days after notifying their commanders, they might have 88 divisions. A week still later, they could have perhaps 93 divisions.

A recurrent NATO problem is the absence of an armored personnel carrier from which infantry could fight, as well as be moved. The Russians have such a vehicle (carrying 11 men) called a BMP. The Germans have one also that carries a crew of eight. The American army is redesigning one for itself and, at the moment, has only armored personnel carriers without significant fighting capability. In defense of its delays, the U.S. army claims that the West German vehicle has little cross-country mobility, cannot swim, is too heavy, has somewhat too high a profile and that its air lock methods of protecting against chemical warfare will not work well. □

FAS PUBLIC INTEREST REPORT (202) 546-3300
307 Mass. Ave., N.E., Washington, D.C. 20002

Return Postage Guaranteed

September 1978, Vol. 31, No. 7

- I wish to renew membership for the calendar year 1978.
 I wish to join FAS and receive the newsletter as a full member.
 Enclosed is my check for 1978 calendar year dues. (I am not a natural or social scientist, lawyer, doctor or engineer, but wish to become a non-voting associate member.)
- \$20 \$50 \$100 \$500 \$10
 Member Supporting Patron Life Under \$10,000
- Subscription only: I do not wish to become a member but would like a subscription to:
- FAS Public Interest Report — \$20 for calendar year
- Enclosed is my tax deductible contribution of _____ to the FAS Fund.

NAME AND TITLE _____
Please Print

ADDRESS _____

CITY AND STATE _____

Zip

PRIMARY PROFESSIONAL DISCIPLINE: _____

Second Class Postage

Paid at

Washington, D. C.