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HAUDIDIEN LECCONKONACY IN SICIECORE STRENETER Dy FRIDMAN Second "The need for an effective Civil Defense is surely beyond dispute... No city, no family nor any honorable man or woman can repudiate this duty..."

**TABLE OF CONTENTS** 

Reader Comment Page 1
CD Calendar Page 1
Hidden Economy in School Shelter, by John A. SamuelPage 2
Spotlight Page 5
Special Report–John Causten Currey Page 6
Rugged Is The Word Page 8
Our Patriotic Duty, by O. Tolstikov Page 10
Technical Report, by W. M. Lauter Page 11
Countdown to Crisis, by Arthur A. Broyles Page 12
Reviews Page 16
Editorial Back Cover

#### COVER PICTURE



Doubt, conjecture and fear cloud the question of nuclear weapons employment in today's world. *Survive's* first "mushroom" picture attempts to portray these "if" emotions and to provide a backdrop to this issue's contents. (Photo: Atomic Energy Commission.)

"Preparing for disaster is not the most pleasant part of my duties, but I consider it one of the most vital and necessary. The forces of nature and the iniquity of men present a potential for catastrophe which no responsible public official can ignore. As Governor of this State, I give my full support to the Idaho Office of Civil Defense and Disaster Relief." -Don W. Samuelson

Governor, State of Idaho

- Sir Winston Churchill

## SURVIVE

... AN AMERICAN JOURNAL OF CIVIL DEFENSE

Sponsored by The Civil Defense Forum The Oak Ridge Civil Defense Society The Association for Community-Wide Protection from Nuclear Attack

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Survive presents authentic information relating to civil defense-to the survival of free government, the United States, and its people in the nuclear age. Its aim is public education in this field and service as a forum.

Authors are encouraged to submit manuscripts for consideration by the editorial board for publication. Articles (preferably illustrated) should be 1,000 to 1,500 words in length, slanted to the non-technical reader, and oriented toward the civil defense field. Views expressed in contributions to *Survive* are those of the authors and do not necessarily reflect *Survive* policy.

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Houston, Texas

#### To: Survive

Congratulations on Don F. Guier's "So Be It!" in the March-April 1970 issue of Survive. I am sure the Civil Defense people enjoy his comments a great deal, but I believe those of us not so directly connected with the business of Civil Defense benefit even more from his sound analyses presented in an editorial form. Please continue. Survive steadily improves in content and format, thus indicating its success.

> Edmond L. Kelley Manager of Security Panhandle Eastern Pipe Line Company

Readers commenting on the March-April 1970 issue of Survive gave Joanne Gailar many compliments for her article on the Soviet Union CD Program. Some called for more brevity in feature articles.

Other comments included the following:

"The material is good, interesting and provoking . . . More of those good book reviews . . . I am 'bogged' down with papers and other materials that have to be read, so especially like condensed versions of articles . . . Keep feeding us pertinent (even though disturbing) facts on the status of civil defense in the nation . . . I regret very much that I cannot give you any suggestions on how to improve Survive except to continue the type of material you have been using . . ."

The American Red Cross wrap-up reports Hurricane Camille losses at over \$14 billion-the most costly storm in history. Listed as dead or missing are 326 persons. The 22.6 foot storm tide was the highest on record, and the storm produced the lowest barometric reading ever measured by an airplane in an east coast storm-approximately 27.03 inches mercury.

914-928-2293

1

#### **CD CALENDAR**

May 4-5	-Region VII USCDC Conference-Reno, Nevada	
May 14-16	-Region IV USCDC Conference-Battle Creek, Michigan	
May 19	-U.SCanadian CD Meet (Idaho, Montana, Washington, British Columbia)-Victoria, B.C.	
June 8-11	-Region VI USCDC Conference-Colorado Springs, Colorado	
June 13-15	-Region V USCDC Conference-Bator Rouge, Louisiana	
June 24-27	-Region I USCDC Conference-Auburn, Massachusetts	
June 29-August	7-OCD Nuclear Defense Design Summer Institute (Air Force Academy)-Colorado	
	Springs, Colorado	
July 19-22	-Region III USCDC Conference-Cocoa, Florida	
July 23-24	-Region VIII USCDC Conference-Billings, Montana	
October 8-9	-ICDO International Industrial CD Colloquium, Nancy (France)	
October 25-29	-Annual USCDC Conference-Corpus Christi, Texas	



Wherever blast and thermal effects of nuclear weapons are not anticipated in nuclear attack, fallout shelter can be considered to be adequate preparedness. But even fallout shelter, as easy as it is to come by, finds the going rough, especially in rural and small town schools, where it is needed most. The author of this article is a veteran of many years of OCD shelter research.



# HIDDEN ECONOMY IN SCHOOL SHELTER

The current civil defense program of the United States is oriented toward a nationwide system of fallout shelters. The present approach to development of new shelter facilities is to incorporate dual use shelter areas in the designs of new buildings by the use of so-called "slanting" techniques.

In many suburban, residential and rural areas the public school is the only building large enough and substantial enough to make slanting economically feasible and thus offers the best possibility to create shelter in the area. As cities and towns grow and new residential areas spring up on the outskirts, new schools are planned and built to accomodate the children moving into the new areas. For these, and other reasons, schools are considered to be one of the most important sources of possible new fallout shelter facilities.

In places where schools are customarily built with basements the creation of shelter is accomplished quite easily and with very little increase in construction costs. In other locations, principally metropolitan areas, schools are, of necessity, built as multi-story structures. Here again shelter can be incorporated economically.

#### -by John A. Samuel

In many places, however, it is not feasible to build schools with basements and land use does not require multistory construction. In some localities fire exit codes make it difficult to obtain approval of even two-story buildings for elementary schools. In these areas the typical school is a single-story building, completely above ground, often of lightweight construction.

In view of the many advantages of schools as shelter locations it is indeed unfortunate that the single-story, aboveground building is the most difficult type of structure in which to incorporate shelter. It is not, however, impossible nor is it excessively expensive. Fallout shelter has been incorporated in single-story, above-ground school buildings at costs which are quite modest compared to the total construction budget.

The cost of incorporating shelter in a building may be expressed in one of two ways: either as a specific dollar amount or as a percentage of the total cost of construction. Since the usual procedure is to use only a portion of the building as a shelter area, the cost of slanting is more directly a function of the size of the shelter area than it is a

function of the cost of the entire building. Thus, expressing the increased cost as a percentage of total cost would tend to favor the large building and penalize the small building. If, for example, the cost for shelter were \$20,000, this would be 10% of the cost for a \$200,000 building and might well be rejected as being excessive. On the other hand, if the building were to be a \$1,000,000 structure, the increase would be only 2% which could be acceptable.

These figures are oversimplified in order to illustrate a general principle. The cost for a given size shelter area is unlikely to be exactly the same for a large building as for a smaller building since many other factors are involved.

In cases where shelter has been successfully incorporated in single-story, above-ground schools, the architect has considered the requirements for radiation protection from the inception of his design. These requirements have been a part of the design program. If the architect waits until his preliminary plans are completed it becomes too late to apply no-cost or low-cost slanting techniques and the cost for adding shelter to the design becomes excessive.

An architect engaged in the design of school buildings often becomes an advisor to the school board on school design and construction. He may thus have a great deal of influence on the ultimate design of the structure. In the final analysis, however, the architect must be responsive to the instructions received from the board and conform to the specifications established for the project. If the specifications do not include fallout shelter as one of the design requirements it is probable that the architect will give little. if any, consideration to this aspect of the design, unless he happens to be personally interested and dedicated to the principle of developing additional shelter. The first prerequisite for incorporating fallout shelter in new school construction is, therefore, that the school board make a decision in favor of shelter during the early planning for new construction. This decision must then be implemented by including the requirement for shelter in the instructions furnished to the architect and by providing for any additional costs when the construction budget is established.

Before a school board can make a decision in favor of shelter it must have the necessary information on which to base the decision. Faced with rapidly increasing enrollments, limited construction budgets and inflated construction costs, school boards are not easily persuaded to spend on shelter money which might otherwise be applied to more classroom space, laboratory equipment, or other items necessary in the educational program.

In addition to limited budgets for construction and educational programs, school boards are beset with many other problems, some of which seem to have no satisfactory solutions. The problem of shelter in schools is one which can be resolved quickly and finally merely by saying, "We can't afford it." It can be easily rationalized that a nuclear disaster is not going to happen and that, even if it should, the responsibility for providing shelter rests with somebody other than the school board.

Thus the problem is resolved and can be removed from an already crowded agenda. No one raises any objection. No one applies any pressure. No one starts a demonstration or initiates court action. No federal or state agency threatens to cut off funds. The board can turn its attention to "more important" things.

Under these circumstances only an exceptionally knowledgeable and dedicated school board would decide in favor of spending some of their limited construction budget for fallout shelter. It is probable that they would have to be convinced that there are advantages other than radiation protection to be derived from the expenditure of these funds.

There are sufficient benefits in addition to shelter to make a valid argument in favor of incorporating radiation protection. Basically, the argument can be summarized by the fact that the type of construction required will provide a more durable, maintenance-free building and that cost savings over the life of the building may more than offset the increased construction cost. Some of the points in the argument are outlined below.

1. It is normally easier and more economical to incorporate shelter in a two-story school than in a single story building. If all concrete construction is used for the two-story plan, shelter is often created on the first floor without any increase in cost.

Two-story construction offers the additional advantage of a lower cost per square foot for construction in most cases. At the same time it requires less land, which results in a lower land acquisition cost or leaves more room for future expansion.

In areas where codes make it difficult to get approval of a two-story elementary school, it may still be possible to locate administration offices, teachers lounges, planning rooms and similar areas which do not require the accomodation of small children in a partial second story.

2. In order to enhance the radiation shielding potential of a building it is desirable to reduce the size and number of windows. In addition to improving radiation protection this will also reduce construction costs since it is cheaper to build solid walls than to build walls with windows in them.

Windows admit heat in the summer and cold in the winter to a much greater extent than do solid walls. Reduction in the window area will, therefore, reduce the cost of operation of the heating and cooling system.

The cost of replacing glass broken by accident or vandalism is usually a major maintenance cost for schools. This cost would be reduced if there were fewer windows.

Windows often admit excessive light or glare into classrooms. If there are no windows or if the windows are offset or baffled for radiation protection there is less need for curtains, drapes, venetian blinds or other light control devices and the room is more easily darkened during use of audio-visual aids. At the same time, outside distractions are reduced or eliminated, promoting a better learning environment.

- 3. One technique which might be used to increase the mass of exterior walls for radiation protection is to add a brick facing. Since brick does not have to be painted every few years as does concrete block the cost of periodic painting is eliminated. The additional mass in the exterior wall also reduces the transfer of heat through the walls with a resulting decrease in operating costs for heating and cooling.
- 4. Masonry interior walls provide effective barriers against the spread of fire and effective sound attenuation. In fact, concrete block walls with the cells in the block filled with sand are often used around band or choral rooms for sound isolation. Such walls are often suggested for radiation protection.

Current education concepts often call for large open areas with only light, movable partitions between instructional spaces. Thus fixed, masonry walls are contrary to educational specifications for the building. There are, however, areas which require fixed walls or where masonry walls can be used without adverse effect on the instructional programs. Such areas might include auditoriums, gymnasiums, food service and dining facilities, band and choral rooms or some multi-purpose rooms. In order to promote efficient traffic patterns these facilities are often located in the core of a building and thus become logical possibilities as shelter areas. Thus fixed, masonry walls can still be used for radiation barriers.

5. In order to have adequate radiation protection in any building it is necessary to have shielding barriers overhead as well as in the walls. This normally requires concrete roof and floor construction.

On two-story buildings, the barriers are provided by the roof plus the second floor and the necessary mass can be provided by structural systems which are not too much different from normal concrete construction. Thus the cost increment for shelter in a two-story school is usually significantly less than for a single-story structure. Often fire code requirements for a two-story building can be met as cheaply with concrete construction as they can with steel bar joists and fire retardant dropped ceilings.

On a single-story school, however, the requirement for a massive concrete roof system over the shelter area is the most significant element of increased cost. The necessary radiation barrier cannot be provided by anything similar to normal roof construction.

The cost of this massive roof is often difficult to justify solely on the basis of increased shelter capability when available construction money is limited. If this cost is not included when the construction budget is adopted, other educational facilities might have to be sacrificed in order to provide this roof. Few school boards would make this sacrifice unless there are compensating advantages. Such advantages might include:

- a. Reduced maintenance. A properly designed and constructed concrete roof system should last for the life of the building with little need for repair or replacement. A typical lightweight roof might have to be replaced in 10 to 15 years and, in the meantime, might have to have maintenance to repair leaks.
- b. Reduced fire insurance premiums. A concrete roof system might be expected to have a two-hour fire insurance rating as compared to a one-hour rating for the typical steel bar joist with gypsum deck roof. The two-hour rating would normally carry a lower fire insurance premium on the building and the contents. The savings on insurance premiums would extend over the life of the building and might almost balance the increased cost of construction.
- c. Improved windstorm protection. A properly constructed concrete roof is not likely to blow off in hurricane or tornado winds. The loss of a lightweight roof in a windstorm can result not only in the expense of replacing the roof but also in possible loss of or damage to the contents of the building and possible injuries or deaths of the occupants. The concrete roof might, therefore, be viewed as a form of storm insurance.

Although there are many advantages to be derived from incorporating shelter in a school the fact remains that it will usually cost additional money to build such a school. This money must be provided at the time the building is constructed whereas cost savings would accrue only over a period of years. The school board may, therefore, be reluctant to make this investment.

But what is it that they are being asked to do? If it is assumed that it will cost \$25 in increased costs to provide shelter space for one person (it can often be done for less than this) and that the building will last for 25 years, the board is being asked to pay an "insurance premium" of one dollar per year per child to save that child's life in the event of nuclear disaster. This seems to be a very small price to pay. Yet, as an added inducement to buy the "insurance," the board is offered a building which should last longer, require less maintenance, be easier and cheaper to heat and cool, will save money on fire insurance premiums and still meet all educational requirements.

On this basis, fallout shelter in schools seems like a reasonable proposition.  $\blacksquare$ 



**SPOTLIGHT** 

# Lincoln Report

## **Due In May?**

Slippage in the scheduled delivery of the national civil defense study by OCD and the Office of Emergency Preparedness has been indicated by sources close to the Executive Offices. Secretary of Defense Laird told a Congressional panel on February 20 that he expected the study to be ready in March. On the expected date, however, those working with the report anticipated that it would be late May before the study was done.

One surprise: the report is now expected to be released for publication, in contrast to some earlier studies which have not been released in full even after a lapse of over a decade. It is understood that the study covers the full range of emergency management facilities of the federal, state and local governments.

From the nation's press:

## "Civil Defense? The Nations Number 1 Joke"

Newspapers across the country introduced an Associated Press special civil defense feature by John T. Wheeler in much this same manner. *The Miami Herald* banner read "In Case of Atomic Attack . . . Don't Count on Civil Defense". *The Sunday Oklahoman* two-decked streamer proclaimed "No Place to Hide: Apathy Chokes U.S. Civil Defense".

Wheeler's article highlights "apathy", and he points to federal civil defense officials who complain that they can do nothing to force local governments to "come up to par", and to local directors who berate Washington for failing to provide strong leadership. Its criticisms are valid. Headlines generally overplayed them.

Civil Defense budgetting is also a point at issue in the story. The annual federal per capita cost of civil defense in the United States is the price of a fair-sized hamburger (\$.35). Trying to buy an individual a year's worth of civil defense for the price of a hamburger makes about as much sense to Wheeler as trying to buy a hamburger for the price of a pinch of salt.

Reaction of CD officials to Wheeler's article was in many cases one of dismay and wishful thinking. A federal civil defense executive from the Region 5 Denton, Texas headquarters, for instance, told *The Dallas Morning News* that his five-state area was "strong and prepared". But OCD statistics show that Region 5 is the weakest of the eight federal regions (all of them deplorably weak). He also assured Dallas readers that shelter in Dallas was adequate and could take care of its entire population. Yet, one reason for the location of Region 5 headquarters in the small town of Denton is that national policy avoids placing headquarters in large population centers. Too dangerous. Standard shelter is *not* adequate.

Wheeler quotes Omaha Civil Defense Director William Noyes as saying that American civil defense amounts to "criminal negligence". The remedy, according to Noyes must stem from those in political harness in Washington. "What must be done?" he asks, and he answers: "The top leaders of the country, including the President, must tell the truth forcefully about civil defense. That would mobilize the people behind a viable program."

Official attitudes, however, are sometimes difficult to digest. Some analysts imply a low-key CD posture—a "thin" shelter effort with no close-in ABM defense for cities. As Survive observed editorially in its July-August 1969 issue, "the fact that most of our people are hostages in the nuclear chess game is apparently acceptable to Washington."

In other words, a built-in vulnerability to nuclear attack a strategy of purposely allowing our people to remain exposed to weapons effects—is being proposed and practised. The civil defense weakness which Wheeler deplores is in this context meant to be.\*

Perhaps the Dallas headline allusion to civil defense as a joke has some meaning after all.

<sup>\*</sup>Note: This line of reasoning is developed in the latest Adelphi Paper (No. 63) published by the Institute for Strategic Studies in London. Writer Ian Smart summarizes the point in this way. "Each side (i.e. the Soviet Union and the United States-Ed.) must have the strength, and be seen to have the strength, to retaliate in adequate degree for any attack. Each side must permit the other to have the confidence that it can also retaliate intolerably. In other words, sufficient retaliatory force must always remain invulnerable, and a sufficient hostage must always remain vulnerable."

# SOVIET MISSILE THREAT- WHAT DOES IT REALLY CONSIST OF?

Special Report -by John Causten Currey

Washington, D.C.-Missiles in service with the armed forces of the Soviet Empire come in many models, and serve many purposes. All have one thing in common: they are designed to instill fear in all anti-communist governments and peoples.

President Nixon's proposal to add one anti-missile defense base to the ABM system approved by Congress last year ran into immediate storm signals in the United States Senate. A number of senators and other spokesmen for the opposition to this plan indicated that they did not believe there was any requirement for the anti-missile defense system, or that any Soviet or other Communist missile threat existed. Those charged with keeping track of what kinds of threat endanger this country, and responsible for our safety, list an imposing number of Soviet weapons which exist already, and are openly flaunted and openly tested. It is difficult to examine that list and still assert there is not danger.

The U.S.S.R., of course, already has an ABM system in use. No new first generation sites have been added for some time, because a later model, or "second generation" ABM is now being readied for service. In the meantime, Soviet leaders have made it clear that what they do in the way of defensive weapons, on their own soil, is nobody else's business.

That seems a reasonable view. Yet Soviet opposition to our creation of a comparable set of defenses on our own soil is vehement. As usual, it is reflected in this country by the Communists, pro-Communists, and many who only want to prove their anti-war sentiments and care little about what they consider imagined dangers. Our ABM, says Pravda, is a threat to world peace; theirs, in contrast, contributes to stability.

Let's get one thing straight:

An anti-ballistic missile defense system threatens no foreign power. It threatens only the success of an attack by nuclear missiles.

Soviet submarine-launched missiles, on the other hand, 6

are clearly intended to intimidate the government and people of the United States, and any others brash enough to ally themselves with us. Most Soviet subs are still equipped with the SSN-1 missiles, but a modernization program is now re-equipping the Soviet undersea fleet with a later version with a 300-nautical-mile range. These missile-firing subs operate off all our coasts, off Hawaii, Guam, Okinawa, Puerto Rico, and off the shores of our major allies around the world.

They call at a major servicing base in Castro's Cuba. They toy with our defenses, testing and probing.

The submarines themselves are noisier than ours, naval experts tell me. That is not necessarily a handicap from their point of view. The Soviet submarine fleet outnumbers those of the United States and its NATO allies combined.

The Soviet force of land-based missiles aimed at the United States is large and still growing. Parity—the point at which the U.S.A. and the U.S.S.R. had an equal number of intercontinental ballistic missiles with thermonuclear warheads—has now come and gone. The Soviets now maintain a slight ICBM superiority.

These strategic land-based missiles fall into three categories. Each comprises a missile system tailored to a specific purpose. The SS-9, which is most often referred to in our press, carries a very large warhead, with power in the neighborhood of twenty-five megatons. (A megaton has explosive force equivalent to that of a million tons of TNT.) American and allied intelligence staffs puzzled, at first, over the need for such enormous bursts. One theory was that the big warheads reflected inaccuracy of early Soviet ICBM's. But in recent years, Soviet missilemen have proved capable of very precise aiming and maneuvering.

The "footprint" of the SS-9 test missiles was measured, and found to conform closely to the area of a Minuteman ICBM installation. Secretary of Defense Laird has now stated to Congress that it is evident that the SS-9 is intended as a "first strike" weapon, to wipe out our retaliation capability at the outset of any war. (The 1941 Japanese attack on Pearl Harbor was a classic "first strike.")

To date, our only defense against a first strike attack by missiles is the planned deployment of anti-missile units (ABM's) around two of our Minuteman base areas. Plans do not shoot down ememy missiles.

The second Soviet missile system is known as the SS-11. Surprisingly, to those who have written off the bomber aircraft, it is designed to wipe out our airbases. It is aimed primarily at the remnants of our B-52 forces. (Our Strategic Air Command has been cut from 1650 planes nine years ago to around 350 today.) Some selected naval airbases are also reported to be pinpointed by SS-11's. The warhead on this missile is smaller, suited to individual pretarget-



ed airbases in this country and overseas, but is still in the multi-megaton range.

Third of the major ICBM's in the Soviet inventory is the SS-13, a city destroyer. Over 200 new ICBM's, most of them SS-13's, were added to the Soviet strategic missile force last year alone.

In addition to these, and to the medium-range missiles which can loft a nuclear warhead at cities in Europe and Asia from Soviet soil, there is the "fractional-orbit bombardment system"—known here as FOBS. In this system, the missile is placed into orbit, coasts part way around the earth (e.g., via the South Pole), and re-enters the atmosphere to drop onto its target from an unexpected direction. It completely bypasses our BMEWS early warning radars. There have been 15 tests of FOBS in the past five years. Around 275 such weapons may now be in the Soviet inventory.

No U.S. counter to any of these weapons exists at present. Our hopes rest on our deterrent forces—or, pur another way, on Soviet fear that we could strike back devastatingly after an attack on this country. The SS-9 and SS-11 missiles are designed to destroy our ability to do just that.

More sinister in its implications to American strategic planners than any intercontinental, orbiting, or submarinebased missile now in service with Soviet forces is a device which was demonstrated some time ago. The whole world was watching as the U.S.S.R. launched a vehicle into space orbit, then a second, and finally a third. But the story of what happened next was largely obscured by attention to a more interesting American space spectacular.

One of the three satellites made rendezvous in space with a second, and then with a third. It did not come into actual contact with either. Yet the second satellite, and in turn the third, broke up and re-entered the atmosphere immediately after encountering the first.

"Maybe it actually shot them down. Maybe it destroyed them with some sort of laser beam—there would be no kick to jar the shooter off course. We really don't know what occurred out there. We do know the results. The interceptor satellite proved it could locate and destroy not one but two orbiting satellites," says a space industry scientist.

"Equally impressive, to us, was the fact that the interceptor re-entered the atmosphere and was recovered in Soviet territory, for study and possibly for re-use."

Pacifists and budget-diverting social planners can ignore such evidence that a threat to our national security exists. Those charged with ensuring the survival of the nation cannot shut their eyes to it.

Meanwhile, the Kremlin makes sure that all who might be tempted to resist its plans are acutely aware of all its nuclear missiles, and of their implications. Political use of this arsenal is a constant part of Soviet activity.

# RUGGED IS THE WORD



Lights play on a night rescue scene among the ruins of a Civil Defense Training Academy as students locate a "casualty."



Pinned in the debris the casualty awaits rescue while students go about the job of freeing her without causing further injury.

The Massachusetts Civil Defense Training Academy\* is probably the best rescue school in the country. In the past thirteen years over 22,500 professional and volunteer disaster technicians have completed rigorous courses here and have vastly improved their ability to function in the confusion and shock of crisis situations.

Located on a 75-acre pine-studded site, the academy attracts public safety specialists not only from Massachusetts but from the entire nation, Puerto Rico, and Canada. In addition to civil defense organizations, students come from industry, business, the military, and police and fire units. The curriculum consists of sixteen courses from one day to two weeks, and includes Basic Rescue, Auxiliary Fire Training, Light Rescue, Heavy Rescue, and a combination rescue course designed to produce qualified instructors. Training is also tailored to the requirements of specialized units. Seabees bound for Viet Nam have exploited the tough academy training to sharpen their skills for combat duty.

Superintendent Anthony M. Zizza has been wi Gustave D. Olson since 1962. They both hold to realism," says Zizza, "and realism is our first rule. Every successful student at our academy must realihe must call on his courage and his knowledge for a tion, for mistakes. This is why our training is ray analyses. Learning is a two-way street. We are const the best rescue workers in the business."

The Massachusetts Civil Defense Training Acade public safety units. First-class lodging and meals ar are those of a resort.

The academy is now two months into its 14tl panded curriculum:

May 11-12	Two Week F
May 27-28	Medical Self
June 3-4	Ambulance
June 10	Radiological
June 19-21	Auxiliary Fi
June 23	Engineering
June 26-27	Emergency '
June 27-28	Light Duty

\*The official school facility for the Massachusetts Civil in the Bradley Palmer State Park, Topsfield, Massachuse



Hood and jacket removed, casualty (Co-ed Posie Means of the University of Massachusetts) simulates hysteria as she is secured for safe handling . . .

h the academy since 1957, and Chief Rescue Officer hard training line. "There is simply no substitute for In rescue operations we are dealing with life and death. the that his training focuses on a future emergency when supreme effort. There is no room for doubt, for hesitaand rugged. We also want the student's ideas and his ntly improving our techniques. This is how we produce

ny charges no tuition. Students come from recognized furnished at a modest \$8.00 per day. The surroundings

season, with the following courses completing its ex-

scue Course for Instructors No. 38 Help for Local CD Staffs rivers CD Emergency Training nstrument Training Training onference elfare Mass Feeding escue Course No. 132

efense Agency, the Civil Defense Training Academy is located 01983.



And down she glides to ground level . . .



Where her hard-working rescuers slide her into a waiting ambulance, still screaming and struggling against expertly-tied ropes.

The author of this condensed article is Colonel General O. Tolstikov, Deputy Director of Soviet Civil Defense. Like the Director he is a military officer. In exhorting the Soviet people to increase civil defense preparedness he follows the usual anti-capitalist propaganda line. It appears here in its raw form. It is obviously meant for consumption by the Soviet public.

# **OUR PATRIOTIC DUTY**

#### by Aviation Colonel General O. Tolstikov

It is not easy in days full of creative labor, sunshine, and happy smiles to write about such matters as nuclear bombs, delivery rockets, destruction, fires, and everything which sows death. Difficult it may be but it is very necessary, essential for life itself.

Recently the Soviet press and world press recalled the horrors of Hiroshima and Nagasaki. This was in connection with the anniversary of their bombing. Here another dark page for man had been "writter" by the hand of U. S. imperialism.

At that time, in the days of Hiroshima, people had no idea of how lethal a weapon had been created by the instigators of war, nor did they realize the incalculable destrutive force contained in this weapon. Japanese cities were caught unaware. Today, however, we know of weapons with even greater "killing" power. We know too that imperialism may embark on some other adventure and suddenly unleash a new world war. Therefore, we must always be on guard and do everything necessary to prevent a repetition of the Hiroshima and Nagasaki tragedy on an incomparably bigger scale.

It is for this purpose that civil defense has been organized in our country, together with active methods of combat. Civil defense will insure protection of cities, industrial and cultural centers, ports, and our entire territory from sudden, devastating enemy strikes.

New and improved forms of defense are gradually and quite durably becoming part of our life. In many industrial and agricultural undertakings these are assigned the same importance as the production activities of collectives—in many, but unfortunately, not in all.

It is well known that the civil defense chief in any factory, institute, educational establishment, or national economic project, and on any kolkhoz or sovkhoz is its leader. He is required to be familiar with the basic principles of 10 protection from mass contamination weapons, and he also must be able to direct a large collective in emergency rehabilitation work.

Helping in the indoctrination of the people in this complex business are drill procedures taught in special courses, various kinds of meetings, and also lectures which approximate to a certain extent the situation in combat conditions and which allow necessary skills to be learned.

This kind of exercise was staged at the Chelyabinak electrometallurgical combine, where actions were worked out by personnel of the civil defense rescue units in the center of an assumed nuclear attack area. In accordance with the tactical situation, the setting was in a zone of extensive and moderate devastation, supposedly caused by a shock wave. Defense installations were partially "destroyed." Exits from shelters were "blocked." The "radiation" level on the combine's territory was also quite high.

In conditions approximating an actual combat situation the skills of those in training were tested in the use of individual means of defense, radiation and chemical detection instruments, and means of communication. There were numerous difficulties created for those performing reconnaissance on rescue work objectives, laying cross-country tracks, extinguishing "fires", mending "damaged" ground communications, uncovering buried shelters, and finding "victims," and giving them first aid. In short, it was not easy for anybody. But these exercises were useful in that they made people operate at full speed and show steadfastness and strength of will.

The value of such an exercise, as we see it, is its realistic and not imaginary (that is, only figurative) approximation of conditions to combat reality. Many preliminary simulations are worked up such as fires, contamination, and ruins, and if they do not appear to be real, the participants will not feel or understand how they should perform their duties in the supposed hotbed of a nuclear explosion and they will not experience the psychological impact which in modern conditions is particularly important.

Let us recall the last war. It gave us many examples of how, by joint efforts, the difficulties and dangers of combat were courageously overcome. In one of their raids in the fall of 1941 fascist aircraft dropped some 200 incendiary bombs on the Moscow "Serp i Nolot" metallurgical plant. It would seem that such a large thermite fire would have reduced the establishment to ashes. But no such thing happened. Every single bomb was put out by the valiant local air defense fighters. Or let us recall the heroic example of Stalingrad. It is calculated that the fascists poured in roughly 250 kilograms of shells and bombs for every man, woman, and child of the city's population. But even fire of such intensity did not break the heroes of the Volga stronghold.

These examples cannot be forgotten. The heroism of the past enables us to look boldly into the face of any new danger.

Remembering the lessons of history and the last war, party organizations and the entire Soviet public are widely developing the propagation of knowledge and organizing the instruction of the population in measures for the struggle against weapons of mass destruction. At many factories, business establishments, educational institutions, sovkhozes, and kolkhozes questions of civil defense are presented at extended party committee sessions and open party meetings attended by Komsomol members, trade union activists, and DOSAAF members. The press, cinema, radio, and television are also included in this national affair. True, not everything here is going in the right direction. As yet, we are still primarily concerned with education. Little is said about the role of the moral-psychological factor in modern warfare and the population's responsibilities. Practically nothing is said by our propaganda about people working in civil defense. And there is indeed something to say about them also.

Civil defense is the affair of each of us and our high patriotic duty!

A technical report on glass that will glow in response to gamma ryas.

## SOMETHING NEW IN RADIATION DETECTION

The November 1969 issue of the West German publication Zivilschutz presents an article by A. Hoegle and K. H. Schubert describing a new method of measuring the intensity of fallout radiation. It is based upon the fact that silveractivated metaphosphate glasses emit visible light when fallout radiation strikes them provided they have been previously sensitized by ultraviolet light.

This method of detecting radiation was first proposed by Schulmann, Ginther, and Klick in 1951 in the United States. Large scale experimentation along this line has been carried on for several years in Germany. Although these glasses should be very useful for measuring radiation dosages during catastrophies, this use has not been previously considered. The construction and further development of phosphate glasses was recommended at the 2nd International Conference on Luminescence Dosimetry in Gatlinberg, Tennessee in September 1968.

Hoegl and Schubert describe in their article how they have built dosimeters and a survey meter from phosphate glasses that could be used to measure the radiation doses received by personnel. A detailed review of the necessary qualities of satisfactory dosimeters and survey meters is presented. In 1966, Hardt had stated that 8 of the qualities listed by Hoegl and Schubert could only be met by phosphate dosimeters and could not be met by the systems currently in use. The phosphate-glass dosimeters permit rapid measurements and will do this for years.

In their own research, the authors used rather complicated equipment. The ultraviolet light was provided con-

#### -by W. M. Lauter

tinuously by a luminescent tube. The visible light emitted by the phosphate glass was measured by a photomultiplier tube with direct showing of the current from the tube.

The authors say that in the 1950's, the U.S. Navy used large numbers of phosphate-glass dosimeters. These were too large and too heavy. An improved model was in capsule form to be worn around the neck. The whole instrument was encased in plastics and was impractical because the polyethylene in the plastic became luminescent itself when activated by ultraviolet light.

The best construction material for the dosimeter appears to be an aluminum alloy GD-ALSi 12 DNJ 1725. It does not affect the skin and is resistant to perspiration and external chemical influences.

A table is given in the article showing the luminescence of various plastics as well as tapes. Considerable care was taken in the testing to make sure water vapor was not present.

The dosimeter design incorporates a lead filter into the capsule so that the 100 kev gamma rays do not affect the glass.

Ordinary conditions, such as touching with sweaty hands, etc., will not throw a 100 Roentgen exposure off by more than 5 Roentgens.

The completed dosimeter (FH 38) and the survey meter (FT 380) are now being evaluated at a "Neutral" institute, and a report will be published soon.

Will there be a nuclear attack on the United States? If so, when? These are crucial questions in determining how much effort this country should make to provide an adequate civil defense system. Dr. Broyles presents opinions of those on the national scene most likely to know the answers.

# **COUNTDOWN TO CRISIS**

It is December 6, 1976. The President of the United States is sleeping in the White House in Washington, D.C. He is very tired after the strain of a long day filled with the problems and awesome responsibilities of his office. A hand on his shoulder shakes him awake and, as he opens his eyes in his dimly lighted bedroom, he hears a voice saying, "Mr. President, it is 2 A.M. and the Russian Premier is on the 'hot line' and wants to talk to you."

The President rises and thrusts his arms into the sleeves of a heavy robe that is held for him as the room lights are brightened, and he walks the short distance to the elevator which descends quickly to the White House emergency communications room. Three top advisors arrive from their rooms moments after the President and stand flanking his chair. His eyes scan the highly classified armament status reports kept current for any unexpected situation requiring the President's quick evaluation of an international military crisis. As he takes the telephone from an aide, the last vestiges of sleep are swept away by the tenseness of the moment, and the knowledge that he is about to speak, at 2:04 A.M., with the leader of a country that over the last half a decade has forged ahead of the U.S. in almost all forms of heavy nuclear armament.

The figures tallied before him are locked in his mind: A three to one imbalance in numbers of Intercontinental Ballistic Missiles, with some 600 heavy Soviet missiles carrying three warheads each, programmed to destroy the U.S. deterrent-the Minuteman missiles. A Soviet submarine fleet capable of launching 1500 missiles requiring about five minutes to reach U.S. bomber bases and other targets—a fleet including killer subs that have shadowed U.S. Polaris subs for years. A Soviet ABM system about many major cities, with well organized and rehearsed evacuation plans-plans which are highlighted on the reports before him with disturbing recent entries.

"Hello, this is the President of the United States," he speaks, hoping the apprehension he feels is not reflected in his voice. The Premier, through his interpreter, replies quickly. "Mr. President, I am sorry to disturb you at this hour, but it is 10 A.M. in Moscow, and I have a matter to present to you which will require your immediate attention. I do not have to tell you the relative military strengths of our nations," continues the Premier, "or to remind you that we have provided blast and fallout protection for our people, as well as effective ABM curtains as a part of our civil defense program."

#### -by Arthur A. Broyles

A feeling of alarm grips the President as he seeks to grasp the intent of this ominous conversation, unrelieved by the usual diplomatic preliminaries between heads of state.

"Mr. President, I believe that only about 100 of your missiles and ten of your bombers would survive an attack by the Soviet Union. These bombers and missiles would need to pass through our extensive defenses to reach their targets. After your attack, we would still have a thousand missiles and nearly our entire bomber fleet. If you choose to launch your few remaining missiles and bombers against our cities, our second attack would devastate your unprotected population, and the United States would lose one-half of its people."

A pause follows, as though the next statement was being timed, then, "Mr. President, we are declaring a limited war against your nuclear strike force. We are avoiding your cities wherever possible. Please do not choose to widen the war by attacking our people. We are making no political demands. We seek only to remove the threat that your forces impose to our country."

At this moment an aide bursts in and shouts, "Mr. President, our outlying radars have detected a large number of incoming missiles of Soviet origin. Our bombers have been ordered into the air. Authority is requested to launch ABM's and to start an attack upon the Soviet Union."

"Permission is granted to launch ABM's but do not attack the Soviet Union," cries the President as he abruptly drops the phone.

The officer by his side speaks anxiously, "But Sir, we must counterattack or they will destroy our attack force."

"You are asking me to condemn half the American people to death, General. As you recall our attack against the Soviet Union can only kill Russian civilians. It was not designed to dig out their ICBM's in concrete silos. It cannot save a single American life. I am sure that we are now destroying many of their submarines, but they have far more than we have. However, I want you to make certain, General, that every civil defense agency in the nation is alerted and operating and that all our armed forces are directed to assist in saving as much of our civilian population as possible."

Could the scene just described really take place? Apparently a number of very knowledgeable people in this country think that it is a possibility. Their views were revealed in last year's testimony before congressional committees on the deployment of Phase I of the Safeguard ABM System. It is also possible to get some idea *when* they think an attack might come and, therefore, when civil defense must be ready to shelter the population by reading the record of these hearings.<sup>1</sup>

We shall base our discussion as much as possible on the hard facts presented by such men as Secretary of Defense Laird, Deputy Secretary of Defense Packard, and nuclear submarine expert, Admiral Rickover. It is interesting that these basic facts were not, in general, questioned by the opponents of the ABM. Their opposition was directed at speculations and future predictions. For example, Dr. Herbert York, former Scientific Advisor to the President, says, "I admit to the numbers the Secretary (of Defense) says with regard to how many weapons they have and what their buildup rate is and so forth."

#### **Our ICBM's Ineffective Against Soviet Missiles**

Our retaliatory force is designed to strike the Soviet population and to kill as large a number of people as possible. It is not designed to be effective against their strike force, although we do have a killer submarine force that can sink their submarines. We see this in Secretary Laird's statement, "Accuracy, however, is less of a factor in structuring a retaliatory force-*strike against cities*-than in structuring a first strike force-*strike against weapons*." He makes it clear that our forces are designed for retaliation and not for first strike. To quote Deputy Secretary of Defense Packard: "We need to assure the potential aggressor that if he strikes us he will receive a retaliatory blow which will destroy him as a nation."

Our retaliatory strike force consists of three primary parts. To quote Secretary Packard again: "We hedge against loss of our deterrent by protecting our retaliatory forces. We hide them under the seas-the Polaris approach-protect them in hardened silos-the present Minuteman solutionput them on recallable alert-our bombers..."

#### The Threat to Minuteman

At the present time, the United States has 1054 landbased intercontinental ballistic missiles (ICBMs) made up primarily of Minuteman (MM) missiles in hardened silos. The chart shown by Secretary Packard (Fig. 1) indicates that we do not plan to increase this number through the year 1975. Apparently even if we changed our mind, we could not alter this production for at least two years into the future and perhaps even three years. That much time is required to pass appropriations through the Congress, let contracts, etc.

The cause for Secretary Laird's concern is revealed in Soviet missile production. They are increasing their strength



rapidly as shown in Figure 1. The most serious matter, however, is their deployment of large missiles-the SS-9's. Secretary Laird expresses his concern by saying, "The Soviet Union today is building at a rapid rate the kind of weapons which could be used to erode our essential deterrent force. They are installing many SS-9 intercontinental ballistic missiles. It is an accurate weapon with a large-up to 25 megatons-warhead. We must give very serious consideration to why this weapon was still being deployed as late as December of this last year. With improvements in the accuracy and a continued increase in numbers, the Soviet missile force could gain real effectiveness against our Minuteman." In other words, the SS-9's might be able to destroy our Minuteman missiles despite the protection afforded by their concrete silos. Secretary Packard states, "The Soviets are testing multiple warheads on the SS-9. And if they give the SS-9 three individually guided warheads with high accurracy and high yields-which they are fully capable of doingthen they triple their threat to Minuteman and remove our confidence that that portion of our deterrent can survive in adequate numbers. This is a danger we cannot ignore."

Laird points out that his information on the SS-9's is new, and that the past administration had not had time to reassess these new facts. In the course of the discussion Laird was asked, "The thing I want to get at is, why have we not used warheads of this size?" Laird's answer was, "When we developed the Minuteman, we did not have the same kind of objective in mind as far as the kinds of targets were concerned. We developed the Minuteman for use as a retaliatory force, not as a first-strike force." In other words, we do not need big warheads to destroy cities, and so our retaliation against the Soviet Union could not reduce American casualties.

#### The Threat To Our Bombers

The insecurity of our bombers is pointed up in Packard's statement, "The growing threat to our bombers is a simple matter of numbers and time. If large numbers of Soviet missile-carrying submarines are stationed close to our shores, their short flight time to bomber bases can reduce the takeoff time available to the planes. Thus, fewer bombers can be expected to get off the ground if the Soviet Union continues to expand its Polaris-type force." The Soviet effort in submarine launched missiles is illustrated in Figure 2. In addition Secretary Laird points out, "The Soviets also can build nuclear submarines at a rate of one per month—they are now building seven per year—which could come close to our shores and attack at short range many of our missiles and bomber bases. They are also working hard on a fractional



orbit bombardment system (FOBS) designed to reduce the warning time of our bombers so that they will not have sufficient time to become airborne." The warning time before submarine-launched missiles reach their targets is estimated at five minutes. For FOBS it is 3 minutes if they are to be detected by land-based radars although satellite warning systems may extend this time somewhat. The satellites themselves may be vulnerable to attack, however. Although a portion of our bomber fleet can be maintained in the air for short periods of time, it is too expensive to keep them up at all times. This is why the Soviet Premier might feel confident that only a small number of bombers would be available to the President for retaliation.

#### Soviet Threat To Our Polaris Fleet

These revelations of the vulnerability of our Minuteman and bombers have lead some people to reject these components of our deterrent forces and to place all their hopes on the Polaris submarine fleet. This apparently would be a mistake. Secretary Laird's concern about the vulnerability of these submarines is shown in his statement, "... I would not want to be in a position after the 1972-73 time period to have all of our deterrent capability on one system—the Polaris submarine system. Right now I am very confident that I think we can rely considerably on that Polaris system. But there are some new developments as far as detection, and other things are involved, and in the 72-74 time period I would not want to place all the credibility of our deterrant on that one submarine program with 41 boats and several of them always off station, as you know."

What Laird meant by "new developments" is brought out in the testimony of Admiral Rickover, Edward Teller, and others. For example, Dr. Harvey Brooks, Dean of engineering and Applied Physics at Harvard, says, "I would think the best way to do this (attack our Polaris force) would be to have attack submarines hanging around outside our ports, where our Polaris submarines come out, and attempting to establish a tail on them as they come out of port, and simply sticking to them, and attacking at an 14 opportune time with underwater weapons of some sort." The distance over which one submarine can detect another by bouncing a sound pulse off of it is classified, but Dr. Brooks' testimony indicates that it is measured in miles.

No one believes that the Polaris fleet is now vulnerable to attack. The enormous Soviet effort to provide attack submarines capable of destroying our Polaris submarines at some time in the future is truly frightening, however. It is summarized by Admiral Hyman Rickover, the nuclear submarine expert, in a letter to Senator Henry M. Jackson, dated June 12, 1969, that reads in part: "Given the recent Soviet progress in undersea warfare and the sheer magnitude of their effort, they will surpass us in thie field during the 1970's . . . The Soviets now have by far the largest submarine force in the world-about 375 submarines, all built since World War II. We have 143, including 61 diesel submarines most of which are of World War II vintage. Thus they have a net advantage of about 230 submarines. It is estimated that by the end of 1970 they will have a numerical lead even in nuclear submarines."

"In the single year 1968, the Soviets put to sea a new type of nuclear submarine as well as several new types of nuclear attack submarines, a feat far exceeding anything we have ever done. It is estimated that by 1974 they will have added about 70 nuclear-powered submarines to their fleet, whereas we will add but 26—thus further increasing their numerical superiority..."

"To achieve this, the Soviets have greatly expanded and modernized their submarine building and repair facilities. Just one of their numerous submarine building yards has several times the area and facilities of all U.S. submarine yards combined. They use modern assembly line techniques under covered ways, permitting large-scale production, regardless of weather conditions.

Rickover further emphasizes the chances of the Soviets beating us in the game of developing new techniques for submarine warfare in his letter to Senator John O. Pastore, dated April 25, 1969. He says: "Numerical superiority, however, does not tell the whole story. Weapon systems, speed, depth, detection devices, quietness of operation, and crew performance all make a significant contribution to the effectiveness of a submarine force. From what we have been able to learn during the past year, the Soviets have attained equality in a number of these characteristics and a superiority in some (though not including quietness).

"In order to achieve the results so far attained in all areas of modern technology the Soviets had to develop their most important resource-technical and scientific personnel. The Soviet educational program enjoys highest national priority. The statistics on the total numbers of Soviet degree graduates are extremely impressive. The U.S. National Science Foundation data indicates that in 1966 alone, 168,000 engineers were graduated: the United States, on the other hand, produced but 36,000. With specific application to the Navy, the Leningrad Shipbuilding Institute, just one naval institute of several, had over 7,000 students in 1966 studying naval architecture and marine engineering. I doubt we had over 400 enrolled in these subjects in all U.S. Colleges.

"While we cannot specifically count the number of Soviet scientists and engineers devoted to naval work, it is apparent that they have created a broad technological base. They have committed extensive resources to support development of their naval forces. The steady build-up of the Soviet submarine Navy from an ineffective coastal defense force at the end of World War II to the world's largest underseas navy today deserves admiration: also it should deeply worry every American. By the end of this year (1969) we face the prospect of losing the superiority in nuclear submarines we have held for many years. The threat posed by their submarine force-with their new ballistic and cruise missile launchers and new attack types-is formidable. If more sophisticated types are added in the near future, as is likely considering their large number of designers and their extensive facilities, the threat will rapidly increase."

Admiral Rickover spends a large part of his testimony expressing his concern that we do not use efficiently the engineers that we do have available. To further emphasize Soviet possibilities of inventing new undersea weapons, Admiral Rickover testified before a Congressional committee: "In support of this work the Soviets have a large organization devoted to designing and building submarines." He goes on to say how much more effective this organization is than ours.

The likelihood that the Soviet advantage in production over the U.S. will continue is emphasized by Senator Symington's question to Dr. John S. Foster, Director of Defense Research and Engineering in the Defense Department. He asked, "If Russia has 376 modern attack submarines, and we have 106, and they are building 12 a year why do we build only two a year?"

Dr. Foster replied, "Sir, I believe that again is a question of finding a balance between how much money we want to spend on procurement and how much we feel we actually have to spend versus how much we would like to spend."

#### Soviet City Defenses

Even though there is danger that our deterrent forces may become vulnerable to extensive destruction at some date in the future, it seems likely that some small fraction of our bombers or missiles will survive. Even though the motivation for a much weakened counterattack by the U.S. against Soviet cities in the face of their far superior remaining forces is not clear, are they taking measures to protect their population against such a strike? Joanne Levey Gailar's articles in past issues of *Survive* indicate that their efforts to provide shelter and evacuation for their people is much superior to ours.

Dr. Gordon J. F. MacDonald, Vice Chancellor for Research and Graduate Affairs, University of California, Santa Barbara says:

"Historically the Soviets have emphasized defense as a

key element in their military posture. Their military experience, dating back to Napoleon, has been one of defending the homeland. Just on the basis of history it might be expected that the Soviets would, in their overall strategic forces, emphasized those elements that would protect and limit damage to the homeland. Indeed, some of this flavor comes across in writings of such Soviet strategists as Zakhorov and Sokolovshy. Whatever the Soviet intentions in the strategic field are, there is the hard evidence of deployment that indicates a Soviet desire to build up at least a damage limiting, if not a first strike, capability.

"The Soviets have deployed a massive air defense system, recently supplemented by the Tallinn system, and a new class of fighter aircraft. Elements of their air defense system have received extensive tests against U.S. forces and equipment in North Vietnam.

"In ABM, the Soviets began with a system around Leningrad, which was later abandoned, probably because of technical difficulties. The Soviets now have underway a deployment about Moscow of a new system. Accompanying such moves toward active defense, the Soviets appear to have emphasized civil defense to a far greater extent than the U.S. has; such a civil defense program makes sense only in the context of an active defense which supplements a damage limiting offense."

#### When Is An Attack Possible?

The experts quoted above have discussed the possibilities that the U.S. may become vulnerable to a nuclear attack at some time in the future. When do they think this time of danger might arrive?

Admiral Rickover says, "To recapitulate, I believe that while today our Polaris fleet is safe from a planned attack by the Soviets, there is sufficient evidence concerning their progress in this field to cause doubt by the mid-1970's."

Secretary Laird says in a letter to a U.S. Senator, "In summary, Mr. Chairman, it is entirely possible that the Soviet Union could achieve by the mid-1970's a capability to reduce, in a surprise attack, our surviving strategic offensive forces below the minimum level required for 'assumed destruction,' and this gravely weakens our deterrent. In my judgement, the overall strategic balance between the United States and the Soviet Union is much too close to run that risk. Therefore, something more must be done now to insure a favorable strategic balance in the mid-1970's and beyond.

A note of more urgency is present in Secretary Packard's reply to the question of why the Defense Department chose not to construct a test site for ABM on the Pacific Island of Kwajelein rather than deploy Phase I of Safeguard. His answer was:

"To have done this would, however, have added at least 2 years, or possibly more, to the time needed to place the complete system in operation. The plan we are now proposing will have the first two sites operational in 1974—late 1973 if we accelerate it—but probably early 1974 at best.

Continued on Page 17.



## **Annual Statistical Report**

Annual Statistical Report, Fiscal Year 1969, Department of Defense, Office of Civil Defense (distributed free of charge through OCD channels).

The Report indicates that the United States has fallout shelter in the amount of 103% of its 1960 population, a 6% improvement over last year. It is a figure which OCD is the first to point out must not be taken too seriously. In his February 20, 1970 statement to the Senate Armed Services Committee and the Senate Defense Appropriations Subcommittee, Secretary of Defense Melvin R. Laird said:

"Even if we continued current programs through the mid-1970s, however, up to half the population would at that time still be without standard (PF-40) shelters. Many areas would have virtually no fallout protection..."

The shelter picture is in reality even less encouraging than this. Much of the so-called "sheltered" half of the population must depend upon fallout shelter within cities presumed to be likely targets—shelter that is not meant to and will not stand up against the blast effects in the vicinity of nuclear weapons bursts. Of the fallout shelter in the United States, 79% is in cities of 25,000 population or more. Washington, D.C. is a prime example. With its complex of massive federal buildings it has shelter for 918% of its population—fallout shelter.

While there is this dramatic excess of fallout shelter in urban areas where its value is questionable, there is a dramatic shortage of fallout shelter in rural areas and small towns where its value is *not* questionable.

Shown below are examples (taken from *Statistical Report* figures) of states where rural protection is particularly low.

Population sheltered against fallout in: Cities over Smaller towns 25,000 population and rural areas

The examples form a part of the general U.S. pattern. In the eight United States civil defense regions (each region is comprised of four to eight states) the percentage of shelter in cities ranges from 115% to 237%, and the percentage of shelter in rural areas and small towns ranges from 23% to 56%.

As the Statistical Report indicates on page 7 under "Improvement," the national fallout shelter program, conceived by the federal government, lacks and needs the support of federal agencies in their building programs. Such support would serve as an invaluable incentive to local shelter programs. The downward trend of federal agency support was pointed out in last year's Annual Statistical Report, which showed that the General Services Administration had authorized shelter in 22 building projects in Fiscal Year 1967 and only 7 in Fiscal Year 1968. Survive charted the plunging curve. (See Survive, Vol. 2, No. 4, July-August 1969.)

In the Fiscal Year 1969 Statistical Report these statistics are omitted. With almost total indifference by the Post Office Department, the Housing and Urban Development people, HEW and other federal agencies, the view from the local civil defense level is one of federal sabotage of the federal shelter program. Any success in stimulating interest in shelter in new construction is accomplished in spite of the example of federal agency construction and not—as it should be—with its help.  $\blacksquare$ 

## Défense Civile

Défense Civile, by Albert Bachmann and Georges Grosjean, published by the Swiss Federal Department of Justice and Police as a requirement of the Swiss Federal Council.

The Swiss Army is tough, trained and ready. It has assured peace for Switzerland in the face of aggression for the past 150 years. Every Swiss soldier is issued his soldier's handbook. It and his rifle belong to him for life.

With the development of modern war strategy the civilian has come to assume a dominant role in national defense. Recognizing this, the Swiss Government has now distributed a companion handbook, *Défense Civile*, to its entire population. On its opening page it says:

"Our fundamental possession is our liberty. All our strength, civilian and military, must combine to safeguard it. No such resistance can be improvised. It will be effective only if all those who must play a part in it know the duties which await them and the means they have for fulfilling them. From this day on we must therefore make a total effort to avoid fatal surprises."

The case for shelter (mandatory in all new construction in towns of over 1,000 population) is emphasized by a multi-colored chart which assumes that a 20-kiloton nuclear

State

bomb has exploded over a city of 130,000 inhabitants. It gives the following statistics:

Attack Situation	Deaths	Injured	Uninjured
Where complete surprise has been achieved—	35%	30%	35%
Where the population has been alerted	23%	17%	60%
Where the population is in shelter	8%	2%	90%

Shelter in the eyes of the Swiss Government is shelter against *all* nuclear weapons effects, plus biological and chemical agents.

Psychological warfare is stressed as another major threat, and probable methods of enemy attack on Swiss morale are described. Pacifism and defeatism are written off as attitudes impossible to tolerate, incompatible with serious approaches to peace and freedom.

Switzerland, the manual stresses, will continue to be prepared, to opt for peace by making its defenses so strong that they cannot be overcome without a prohibitive price.

This is the message that *Défense Civile* delivers to the Swiss populace. A copy of the book has been printed for every Swiss household.  $\blacksquare$  (WM)

Hal Foss reports in the January-February 1970 issue of Act that over 50,000 man-hours were rung up in 243 missions performed by civil defense search and rescue teams in Washington during 1969. Composed entirely of volunteers these emergency specialists are available around the clock in 39 counties and take air, water and mountain rescue operations in stride as a community service.

### COUNTDOWN TO CRISIS

Continued from Page 15

"If we had proceeded to put in a complete installation and tested it at Kwajelein, it would have delayed the first installation until early 1976. In my view, that was too long a time to take because, if the threat had developed in the interim and we had felt it was necessary to proceed with the system, this approach would not have given the President an appropriate base from which to solve the problem."

It seems to be clear that, at the time of the testimony (spring of 1969), these experts feared a Soviet first strike capability around 1975. Most plans for developing a complete civil defense blast shelter system<sup>2</sup> count on a period of at least five years for installation. Construction would have to start very soon if it were to be ready in 1975. Unfortunately, Congress is making no plans to appropriate the necessary funds, at the present time.

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# Will It Happen?

The two key questions on civil defense in this age of the Bomb are: Will it happen? And, would civil defense help if it did happen?

The second question is much the easier to answer. If nuclear weapons are used, all scientific and engineering evidence is that with a strong civil defense casualties will be but a small fraction of the casualties with a "paper" civil defense. *Survive* has reported much of this evidence.

But the question-will the Bomb be used?—is clearly more difficult, involving, it seems, a foretelling of the future. Civil defense studies have largely ignored it. However, history offers evidence which all but answers the question.

First, what is the probability of war itself?

History offers no grounds for optimism. As Will and Ariel Durant said in *The Lessons of History*, "War is one of the constants of history, and has not diminished with civilization or democracy." Over all of recorded history, they add, the bloodletting of war has occurred in 11 of every 12 years. We know the past year itself has seen three wars. If in the year 1970 wars were to cease forever we would be witness to a discontinuity in history without precedent. For that matter, what human ideology or institution in this year of 1970 even holds the slightest promise of working this miracle at which all previous attempts have failed? The past tells us almost unequivocally that wars will continue.

But even in war, may not an antagonist use restraint? May he not abstain from using his most inhumane and terrible weapons? Or may he not fear tipping a balance of terror?

Yes, in colder stages of a war these restraints are

often evident. But war is the ultimate of competition, and in the heat of war's decisive stages, as defeat becomes imminent, history shows that these restraints have almost invariably evaporated. In the last great war Hitler certainly observed no such restraints. It would seem foolhardy to expect Mao's successors or the Kremlin to do so in the future.

But might not the immense, quantum jump in power and destructiveness introduced by the Bomb be sufficient to break man's habit of using his most powerful weapons and perhaps even break history's endless chain of violence?

For this question history has the least evidence. Fortunately, Hitler did not have the option of using such weapons at Stalingrad. Nor did the Turks at Vienna in 1683. Nor did the Moslems at Tours in 732. Only one nation has had this option in a major war. This nation happened to have a longer record of constitutional democracy, and probably of international altruism, than any other nation. In 1945 the United States of America, following victory over Germany and with victory over Japan assured, having this option, chose to use these weapons.

Should we stake our lives on the assumption that the world's next Hitler will have more restraint than we did?

Not only history, but the proliferation of nuclear weapons and the chances of their accidental or purposeful use lead to a conclusion well stated by Dr. Jerome D. Frank in his *Sanity and Survival:* ". . . the longer the risk (of nuclear war) continues, the greater its probability; if the probability continues long enough it approaches certainty."

The same certainty applies to our need for an effective civil defense. • (HAS)

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