AN AMERICAN JOURNAL OF CIVIL DEFENSE

VOL. 4 NO. 4

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THE CIVIL DEFENSE FORUM THE OAK RIDGE CIVIL DEFENSE SOCIETY THE PROFESSIONAL SOCIETY FOR NUCLEAR DEFENSE THE ASSOCIATION FOR COMMUNITY-WIDE PROTECTION FROM NUCLEAR ATTACK



"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. . ."

- Sir Winston Churchill

SURVIVE

VOL. 4, NO. 4

JULY - AUGUST 1971

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The foremost expression of Soviet naval power is its submarine force. It is bold in outlook, varied in type, technologically capable and moving steadily towards a predominantly nuclear-powered fleet built around the advantages of ballistic and tactical missiles. It is far and away the largest submarine force ever created prior to war, a fact whose unique significance can best be judged by contrast with major submarine campaigns of the past. Germany in both World Wars, and the United States in World War II in the Pacific-for all the near-decisive results their submarines were ultimately to attain - at the outset of hostilities, each had a limited number initially and could deploy only a handful. But for the Soviets, there will be no protracted wait for their underseas power to rise with the measured rate of their building yards. Their force is in being, it can take immediate and full advantage of the historic disarray, the always belated awareness and the slow cranking up of skills and organizations that characterizes antisubmarine warfare's beginnings in every war. Their submarine force can strike hammer blows from the start.

-From "A United States Navy for the Future," by Captain Robert H. Smith, in *Proceedings, United States Naval Institute*, March 1971.

In Placquemines Parish, Louisiana some people have three mortgages on their homes or businesses — the original mortgage, one for recovering from Hurricane Betsy in 1964 and a third for rebuilding after Hurricane Camille in 1969. In many cases insurance settlements are still being negotiated.

The first U. S. Poseidon-equipped submarine, the James Madison, is now on station. A second such sub, the Daniel Boone, is due to be dispatched this summer. Each sub is armed with 16 Poseidon nuclear missiles, each missile made up of multiple warheads (MIRV).



EDITORIAL -TARGET: SOLUTIONS!

As CD Director of Jacksonville, Florida, Bob Blodgett has two *Survive* strikes against him: (1) he's too close to home, and (2) he's a CD pro. We'd rather listen to a plumber from Passaic. It's more difficult to accuse him of being prejudiced.

But Bob doesn't strike out. We use his advice. In helping to scuttle a proposed item citing a case of public apathy and resultant slaughter in World War II he suggests we look to "future CD alternatives without proving and belaboring the failures of the past. I would not be concerned with how 'far out' they might seem," he says. "A 'think-tank' approach would require agreement or disagreement, violent or otherwise, but at least not simply a reaction of passive approval."

In looking over our past issues we could rationalize our guilt or our innocence. It adds up, however, to a conclusion that it may be time to put a heavier accent on the *positive approach* to civil defense. For years we've been citing the errors of a flaccid U. S. civil defense program. We've been rewarded with polite attention and indifference. Perhaps the spotlight needs to be turned more directly on the paths toward *achieving* heretofore elusive goals.

Congressman John Schmitz gives us a starting point on page 3 of this issue when he says "it is absolutely necessary that prevailing trends be reversed and if enough of us keep at it the possibility exists that we may be able to prevent the final Pearl Harbor."

How? Why not:

a. Actively help Congressman Schmitz and other farsighted politicos (federal, state, county and municipal) to build workable legislative survival frameworks that can't be pigeon-holed;

b. Get the Lincoln Report published;

c. Provide estimated *decreased* casualty statistics with a developed civil defense;

d. Provide estimates of the *increased* odds for peace with a developed civil defense;

e. Provide simple studies on the real economy of shelter construction, with specific guidelines;

f. Explode doomsday myths with positive information and explore boldly the survival solutions of other countries (including the techniques of blast shelter and evacuation); and

g. Feature examples of realistic survival planning? (Survive for September-October 1971 will feature "Tomorrow's Corporate Survival Center: Bull Pine Ranch," by Diane Sells.)

There are other routes. We need articulation. We think Bob Blodgett makes a point that calls for prompt prodding: move the focus to *solutions*! JULY - AUGUST 1971

SURVIVE

... AN AMERICAN JOURNAL OF CIVIL DEFENSE

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

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Authors are encouraged to submit manuscripts for consideration by the advisory 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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"Where would you want to be if an H-bomb hit?" "Anywhere I could say 'What was that?"

From the Halls of Congress...





Congressman John G. Schmitz

On Monday, May 3, 1971, Congressman John G. Schmitz (35th District, California) addressed the House of Representatives on the subject of civil defense. As a basis for his remarks he used Joanne Gailar's article "Is the Soviet Civil Defense Program Really Better Than Ours?" which appeared in the March-April issue of *Survive*.

Said Congressman Schmitz in part:

Mr. Speaker, recent confirmation of the continuing Soviet effort to attain an unsurpassed military capability on the nuclear level has been brought to our attention by the Secretary of Defense and Senator Henry Jackson. While they have dealt in the main with the most recent developments in Soviet deployment of strategic offensive and defensive weapons, the Soviets now have an intercontinental ballistic missile force practically 50 percent larger than ours in numbers of delivery vehicles and many times larger than ours in terms of total megatonnage or destructive power, there nas been no real official notice taken of an equally determined drive being undertaken by the Soviets to improve their civil defense capabilities.

Civil defense is of real importance to a power like the Soviet Union whose force in being and under construction make sense only when viewed in light of the intention to acquire a first-strike capability against the United States. This is because a first-strike capability consists in being able to lower the enemy's retaliatory capability below a certain threshold of acceptable damage through the use of counterforce weaponry and ballistic missile defense—BMD. BMD consists not only of active defense measures, such as the 64-launcher Galosh system currently operational around 2 Moscow, or the new Galosh system now under construction, or the 1,200 site SA-5 surface to air missile Tallin system of which Dr. John Foster, Director of Defense Research and Engineering, has said:

"If the SA-5 system is given information from the large ballistic missile acquisition and tracking radars, then it could have considerable capability in making successful intercepts of incoming ballistic missiles."

but also of passive defense measures such as civil defense.

Civil defense procedures limit damage. A well organized civil defense program, especially easy to organize in a totalitarian society such as the Soviet Union, can substantially lower the level of damage to the population resulting from a nuclear exchange. Dr. Eugene Wigner, U. S. Nobel laureate, has calculated that successful massive evacuation of Soviet cities prior to launching an attack on the United States would leave us with a best shot possibility—i.e., the Soviet strike does not damage our weapons system, their antiballistic missile systems are completely inoperative, and we aim only at evacuated civilians—of inflicting only 5 percent fatalities on Soviet society. Civil defense of this magnitude or even anything approaching this magnitude, is a very SURVIVE real factor in damage limitation. It is therefore a very real factor in preparing for a first strike capability, the criteria for which is the ability to limit damage to one's own society.

While serious analysts of nuclear strategy have long ago seen through the spurious thinking behind the assured destruction strategy advocated by former Secretary of Defense McNamara – that is, constructing one's military forces in such a manner so that retaliation is limited to striking only enemy civilians and industry while hoping against hope that the enemy would not develop an efficient means of effectively limiting this damage to himself through a combination of offensive and defensive systems – the United States has still not taken measures designed to alter our force posture in a manner suitable to implementing a sounder strategy. On the other hand, the Soviets are going all out to lower the level of damage we are able to inflict.

In a letter to *Survive*, May 5, 1971, Congressman Schmitz wrote:

Your efforts toward making the American people aware of some of the essential factors on which their survival depends are greatly appreciated by those of us in the Congress who are attempting to reverse the currently existing trends in the area of national defense which are leading toward final national disaster.

The problem involved in raising public interest toward defense matters, as I am sure you are aware, is that the threat is not immediately perceptible and there is a great deal of effort and energy devoted to concealing just the information which it is necessary to bring forward. There is also a profound theoretical gap in the thinking of many of our most articulate and influential, although unthinking and ill-informed, molders of opinion. It has reached the point where even awareness of strategic force relationships as they actually exist does not result in the advocation of activity which could help cope with the problem.

Correct conception has been distorted to the point where it is very difficult to make many of our leading figures understand that the probability of nuclear war is directly related to the probability of the Soviet Union being able to achieve a favorable decision using this method of struggle.

However, it is absolutely necessary that prevailing trends be reversed and if enough of us keep at it the possibility exists that we may be able to prevent the final Pearl Harbor.

FROM THE AMERICAN PRESS

(Excerpt)

Today the civil defense program is fighting for survival. Supporters say its budget is barely enough to keep present civil defense operations from deteriorating. They say, too, that the program suffers from a lack of direction from the Nixon administration, which still hasn't acted on a civil defense study it ordered two years ago [The Lincoln Report]...

Despite this, the Office of Civil Defense doesn't give up... Industry and commerce have adopted civil defense programs with enthusiasm. At least 20,000 companies have put records underground, and concerns such as Standard Oil Co. (New Jersey) have standby underground headquarters...

By and large, however, the civil defense program seems stalled. . . "In reality," says a candid research report just published by the Office of Civil Defense, "it appears that today's civil defense could only meet the full test of adequacy under one contingency: the contingency that nuclear war does not occur."

-The Wall Street Journal, May 20, 1971.

Commentary...

In your March-April 1971 issue, reader Clement J. Steichen commented about our failure to provide adequate civil defense in a manner suggesting that the responsible government officials are showing callous disregard for the protection of citizens. On the next page the *Survive* Report points out in similar vein the frustrating delays in the civil defense program, as follows:

"What are we waiting for? Could it be that Americans are hiding facts from Americans? Is there really a fear that we might achieve a capability of protecting our homeland?"

The question of whether Americans are hiding facts from Americans is not hard to answer. The answer is Yes. For illustration, consider the congressional hearings of 1969 on the ABM controversy:

Two key witnesses were Dr. E. P. Wigner (pro) and Dr. Jerome B. Wiesner (anti). At that time it was generally conceded that Russia already had overtaken and probably surpassed the United States in overall nuclear capability. Yet Dr. Wiesner irrationally advised against an ABM defense for our country on the basis that it would be "provocative." He did not mention the fact that nine years earlier at the Sixth Pugwash Disarmament Conference in Moscow (1960) when the United States had clear nuclear superiority, he had urged the Soviet Union to develop a defense system that could absorb a surprise attack. The only potential aggressor at that time was the U. S. A.*

Another example is the case of Walter Rostow, formerly the Special Assistant to the President for National Security Affairs (similar to the position now held by Henry Kissinger) during the two preceding administrations. Few will doubt that in such capacity, Rostow exerted considerable influence on military preparedness and civil defense. What is of interest is that twice before his appointment to this position in the highly critical area of national security, he was refused security clearance for lesser positions by two different branches of federal government; to circumvent a third rejection, President Kennedy resorted to presidential privilege to cancel the usual security check in making Rostow his special assistant.**

With numerous persons holding leadership positions in government, science, communications and business being of persuasions exhibited by Dr. Wiesner and Rostow, can America retain the will to survive?

Perhaps the answer in this case can be found in a speech by Congressman L. Mendel Rivers, who had been chairman of the House Armed Services Committee from 1965 until his death in December 1970. Known as a firm believer in military preparedness, he stated his well-founded convictions forthrightly. Just before his final illness, he made

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a major speech in the House from which the following is taken:

"The leaders in the Kremlin are now evidently unimpressed by both our military capability and our national determination to survive Since the deterioration of our military capability is not secret to the Kremlin, I believe it time we tell the American people the facts."

Axiomatically, it can be concluded that some Americans *are* hiding facts from Americans, for these examples are only a few among many.

-Sydney Mann Knoxville, Tennessee

Framingham, Mass.

Contrary to *Survive's* March-April editorial, the stations that went off the air "as they are supposed to do" on receipt of the February 20 false alarm can't be commended (though they can perhaps be excused) for "reacting correctly".

The stations that were both alert and familiar with EBS drills and procedures spotted the message immediately for what it was, an egregious and potentially harmful error. Acting responsibly and creditably, they did not let it spread. They did not pass on to the public the false alarm "directed by the President."

It is reassuring that so many stations behaved thus, in the exercise of intelligence, resourcefulness and responsibility. They did not react blindly and mechanically; they saw, they made sure, and they blocked the error.

-Leo Michael Linehan

Both the FCC and the Department of the Army investigated the circumstances of the February 20th false alarm. The message to go off the air occurred during a scheduled test time, hence many stations concluded it was a false alarm and paid no attention to it.

The probability of a true alarm occuring exactly at test time is very small, yet possible, perhaps by design of the attacker. If there had been such an attack planned in advance to occur at EBS test time, it would become questionable whether or not those stations ignoring the message acted with intelligence, resourcefulness and responsibility. -Ed.

CIVIL DEFENSE CALENDAR

| September 15-17 | Conference, Minnesota Association of Civil Defense Directors – Bloomington |
|-----------------|---|
| | Civil Defense Directors – Dioonnington, |
| | Minnesota |
| October 17-22 | Conference, United States Civil De- |
| | fense Council – Las Vegas, Nevada |
| February 20-23 | Conference, United States Civil De- |
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SURVIVE

^{*}Human Events, August 10, 1961, page 8.

^{**&}quot;The Otto Otepka Story," Human Events, Special supplement, p. 5a, (Feb. 17, 1968).

The Canadiar CL-215 is a new "water bomber" designed to combat forest fires from the air. Its unique capabilities were described in the November-December 1970 issue of SURVIVE. The first CL-215s – ten of them – went to France, where during the summer of 1970 they received a baptism of fire a good bit more violent than expected.

The "Mistral" vs. The Canadair CL-215

A Survive Report

The "mistral" is an odd wind that follows the Rhone River Valley and blows on a wide sweep across southern France into the Mediterranean Sea. It comes up religiously in July, and it lets up in October. It has been doing this as far back as man can remember.

It is an infamous wind. It is cold. It is dry. It reaches sustained velocities of sixty to seventy miles per hour. It can - and does - blow for days without respite.

When the mistral is combined with drought the forest trees and the forest carpet become exceedingly dehydrated. Conditions for fire and fire spread are then at their most critical point. It is a period of extreme danger.

The French know this. Meterologists know the mistral's cause: low pressure areas in the Mediterranean Sea. The mistral can in a dry season turn a normally hazardous situation into one that defies control.

This happened last summer -1970. Last summer was also the first real test of the new CL-215 "waterbomber" aircraft manufactured especially for fighting forest fires by Canadair Limited of Montreal. France had ordered ten, had them on hand. They replaced aging Catalinas, the American amphibian workhorse of World War II vintage

In analyzing the 1970 difficulties the French Civil De-JULY - AUGUST 1971 fense magazine *Protection Civile* calls for improved measures of prevention, as well as for rapid detection and prompt attack. For the first time Canadair CL-215 waterbombers were employed as a squadron. So great were the demands on the Canadairs, however, and so exceptional and hazardous the fire fighting conditions last summer that their effectiveness was not well demonstrated. Personnel and maintenance limitations also hampered operations and are contemplated – with a considerable lack of relish – for 1971.

Protection Civile says:

"The [air] fight against forest fires is assigned to the CL-215 amphibians, two of which entered in service in 1969 and eight in 1970. This means that these aircraft – the only ones in the world of this type to combat fire – were this year still an experiment . . . These aircraft performed (in 1970) over 900 fire-fighting missions which resulted in over 7,000 water drops representing over 38,000 tons ¹ of water under hazardous conditions. Progress was substantial, as in 1969 the last of the "Catalinas" and the first two Canadairs dropped 13,500 tons. And in spite of these impressive results the aircraft were not good enough to remedy the exceptionally difficult conditions of the summer of 1970. . .

"Although it was sometimes impossible, due to unfavorable meteorological conditions or unusually rugged terrain, to employ Canadairs it remains a fact that for numerous fires their employment is not only effective but irreplaceable. In some areas they are the only means of combatting fires. Even though France has the largest long-distance waterbomber fleet in the world the number of these aircraft remains insufficient when multiple fires occur . . . We should consider immediately the purchase of a new group of six of these aircraft inasmuch as a better protection of our Mediterranean forests is at stake."

Pierre Teissier, retired French Army general and French pioneer in the field of nuclear weapons effects², has made special analyses of combatting the baffling mistral fires. "They develop very quickly," he says, "and we have seen the fire front advance at speeds of over 25 kilometers an hour under the effect of the wind. In addition to this, pine cones explode in the heat and are projected in all directions – sometimes as much as 100 feet in advance of the fire front where they kindle new fires in the dry underbrush. Flaming tree branches travel even farther."

"The fire front — usually not more than 200 feet wide — sends up a 2,000-foot column of hot air accompanied by dense smoke and burning branches. Violent gusts and abrupt wind changes mask the fire for observers and fire fighters. This phenomenon is responsible for over half the fire-fighting deaths.

"Behind the fire front the burned-out zone remains very hot and creates a rising mass of hot air 1,000 to 1,200 feet in altitude.

"When a 'water-bomber' suddenly opens its tanks the water takes a little time to leave the tank and the wake of the aircraft. The slower the speed of the aircraft the shorter will be the pattern of the water drop. The plane needs to be almost at stalling speed, and this means that excellent pilots are required. With the resistance of the air, the width of the water drop increases from 5 feet at the plane's altitude to 100 to 125 feet on the ground 165 feet below.

"The aircraft dumps its water on the fire front in a tempest of extremely hot rising air above the flaming trees which radiate an intense heat. Most of the water that is dropped is vaporized by this heat and never reaches the ground. The time it takes the water to fall from the plane to the ground must be as short as possible. Therefore, the water bomber must empty its tank at a very low altitude. The limit of risk for a plane in these circumstances is 165 feet. Even here *less than 20%* of the water released actually reaches the ground. This is why small planes and helicopters are ineffective. The ideal would be a very big, slow, maneuverable bomber capable of dumping a very great quantity of water all at once."

General Teissier also points to problems of:

(1) Proper orientation of the plane in coming in for a water drop. Precision is all-important, and a reconnaissance helicopter remains in the immediate vicinity of the fire to guide and instruct each approaching plane.

(2) Reloading of the water tank. In Southern France this is usually done in the Mediterranean Sea inasmuch as fire locations are usually close to the coast. (The only serious fires not in coastal departments last year were in Ardèche, extending just west of the Rhone River and 200 miles north of the coast.)

(3) Time lost in reaching fires. In some cases – Corsica for example – planes take up to 2 hours to reach fires.

(4) Time lost in going to and from water sources in between drops.

All these problems add up to a "rotation" time – a round trip. A rotation is considered to be within reason if it is less than 45 minutes, and this limits the distance between the fire and the source of water to around 60 miles. The cost of oil and gas alone for a 45 minute round trip brings the cost of a pint of "fire water" up to about the cost of a pint of soda water in a cafe.

It's an exhausting, frustrating, extremely hazardous game – not one for amateurs. One CL-215 has already been lost. Recruiting is done exclusively from that category of French Naval pilots with over 15 years service. Their long experience in adjusting to aircraft carrier landings and takeoffs fits them for the torturous demands of pinpointing water drops on raging and deceptive fire fronts.

As for employment in nuclear attack situations, this remains to be seen. It is at this point a matter of conjecture. Certainly, General Teissier points out, it would be ridiculous – and suicidal – to try to fight a fire storm. You let it burn out. Then maybe water drops might save a few survivors in deep shelters over localized fires – if their locations are known. The peripheral areas? Maybe, if radiation levels permit. But here the fire front may be measured in miles instead of feet – one problem. Another is that roofs still intact may make fires pretty much inaccessible from above.

There is also the question of conventional fires in a nuclear attack situation outside the blast areas but under conitions of radiation intensities that make surface fire fighting too risky. Plane crews making water drops would be exposed to a somewhat lesser concentration of radiation for a much shorter time. There are certainly possibilities here for effective water drops in many cases.

Anyway, the CL-215 and its progeny are here to stay.

Note: In April 1971 one Canadair CL-215 was employed to fight widespread fires in the Florida Everglades. Critics complained that it was ineffective. The principal value of the CL-215, however, is its *prompt* use *in numbers* to help extinguish *remote* fires *before they develop*. The employment of the CL-215 in the Everglades apparently violated this concept on all points.

 $\overline{I_A}$ pproximately 42,000 American tons

²General Teissier is the author of "The Question of Blast Shelter -as Seen From France" which appeared in the March-April 1970 issue of SURVIVE.

PROFESSIONAL SOCIETY IEWSLETTER NUCLE DEFENSE õ 53701 NO. 4 õ ٨, MADISC

An Idea Whose Time Has Come, & Come, & Come, & Come, &...



The Department of Defense has a requirement to provide fallout shelters for (1) all DoD personnel and (2) citizens of adjacent communities where feasible and necessary ullet ulletThe Department of Defense, by its actions and example in providing fallout shelters, can further demonstrate to the public its preparedness for any eventuality, including nuclear attack.

We passed the above Directive around the office several weeks back with the question, "When was this Command Document written and published"? Some placed it circa the Federal Civil Defense Act of 1950, others thought it expressed a concern surrounding the Berlin crisis of 1961. The majority picked the Cuban confrontation of 1962. Nope, gentle reader, it's April 13, 1971.

Although an expression of commitment to human survival by DOD is welcome, even when rather tardy, there is something basically absurd about the wording, "demonstrate to the public its preparedness for any eventuality, including nuclear attack". One suspects that the public, in its innocence, already entertained the notion that DOD was somehow prepared for "any eventuality, including nuclear attack". In point of fact, however, the Directive puts its finger on the philosophical myopia from which the Massive Retaliation/Assured Destruction boys have suffered since the Battle of Hastings.

We had the opportunity to visit one of the Minuteman missile command bases in the central U.S. last month. Very impressive! Here were 150 ICBMS, each with a 1.2 MT warhead ready to smash down on cities or other missiles. 0f course, the hardened sites were also 150 ground zeros for an enemy first strike. No expense had been spared to assure that the 30 or so men who will launch these 150 brutes are fully protected and able to do so. Thirty men! But what of the thousands of wives, children, friends, nearby residents who are living with them on the Bullseye? Nothing! Aren't they part of the people and society the missiles are supposedly defending?

As long as war is limited to contacts between SAC inspectors and launch teams, no one is concerned with those people. If a real war occurs the missiles assure the destruction of the same people unless they are provided some degree of shelter.

Unfortunately, this inconsistency has been bred and re-bred into defense strategy and congressional response as though it were somehow logical! Well, anyhow, the Directive is welcome and we wish DOD godspeed in implementation. After all, we've got twenty years to make up for.



selected shorts

There have been several recent incidents of thefts of phenobarbital tablets from medical kits stored in public fallout shelters. Many of these thefts have occurred in school buildings from kits that were thought to be under lock and key. John E. Davis, Director of Civil Defense, has urged immediate checks of medical kits in shelter storage and the removal of the barbituate, Phenobarbital, if it is not completely secure from theft.

The Reserve Officers Association of the United States unanimously passed two resolutions at their recent conference which are supportive of a stronger civil defense posture. One notes the general lack of fallout shelter space in locations away from urban areas and urges federal funding to provide inducement for such space in all new school construction. The other resolution points to the fact that USSR and Red China, as well as many free-world countries, require mandatory CD training for adults and students and contends that the public apathy towards nuclear defense is the result of inadequate education of the general public. The resolution calls for obligatory basic CD instruction for secondary school students.

The membership of the House Treasury & Post Office Subcommittee was described in May Newsletter. The Senate Appropriations Committee provides their counterparts in the Treasury, Post Office, and General Government Subcommittee which has responsibility for Civil Defense appropriations. The Subcommittee includes Senators JOSEPH M. MONTOYA (D-N.Mex), (Chairman), ALLEN J. ELLENDER (D-La), DANIEL K. INOUYE (D-Hawaii), J. CALEB BOGGS (R-Del), and GORDON ALLOT (R-Colo).

IF YOU WERE TO WRITE ONE OF THEM URGING THEIR SUPPORT OF NATIONAL CIVIL DEFENSE FUNDING, THE MATERIALS, COST OF POST-AGE, PAPER, ENVELOPE, AND INK FOR JUST ONE LETTER WOULD INCREASE YOUR PERSONAL ANNUAL PER CAPITA FINANCIAL COMMITMENT TO FEDERAL CIVIL DEFENSE BY ABOUT 50 PERCENT.



₩ADISON, WISCONSIN

Unheeded Sentry: Fight for Survival Occupies Civil Defense Program

By STEPHEN J. SANSWEET

Staff Reporter of THE WALL STREET JOURNAL During the height of the Berlin crisis a decade ago, Douglas Bartholow, a retired Orlando Fla., contractor, joined thousands of other pru dent-or scared-Americans and dug up his backward to huld a followin backwar backvard to build a fallout shelter.

The three-foot thick cement-block structure cost about \$3,000 and was stocked with all the necessities of survival, ready to be used when the inevitable atomic warfare started.

Well, the Bomb hasn't arrived yet, and the wen, the Bonn has't arrived yet, and the shelter now protects a sewing machine, some canned fruit and records from a fried chicken franchise owned by the family. "We never re-gret building the shelter," says Mr. Bartho-low's wife, Mary. But, she admits, she doesn't think a lot about atomic bombs and civil de-tance there done fense these days.

Neither do very many other people. With rare exceptions, the American public and govrare exceptions, the American public and gov-ernment have forgotten about civil defense. This is quite a reversal from 10 years ago-when, spurred by the Berlin confrontation, the Kennedy administration urged the country to dig in. More than \$500 million was spent in three years to identify and stock shelters, im-prove communications and spur industry to menage for a holocaust. epare for a holocaust.

A Host of Problems

A Host of Problems Today the civil defense program is fighting for survival. 'Supporters say its budget is barely enough to keep present civil defense operations from deteriorating. They say, too, that the program suffers from a lack of direc-tion from the Nixon administration, which still hasn't acted on a civil defense study it ordered two years ago. And they say it is plagued on the local level by politically appointed direc-tors, some of whom appear only remotely in-terested in what civil defense is all about.

Some Americans insist the program de-tracts from chances to solve international problems peacefully and therefore should be abandoned. Others are convinced that it would be impossible to survive an atomic holocaust with or without civil defense, although civil de-fense authorities insist this isn't the case. And many people apparently think nuclear war is so remote a possibility that civil defense is a waste of funds; surveys show that in the past five years public expectancy of nuclear war-fare has declined almost to zero. Indeed, one Midwest contractor stuck with dozens of pre-fabricated fallout shelters a few years ago couldn't give them away, even after advertis

Despite this, the Office of Civil Defense mere are enough spaces in doesn't give up. There are enough spaces in public fallout shelters for about half the popu-lation, and home basements are being touted as a good way to protect millions of others until public shelters are expanded. (Civil de fense officials say shelters would save more than 25 million people who would survive the direct effects of a nuclear attack on the U.S. but who otherwise would die from the fallout.) Sounding the Alert

A program to acquaint architects with methods of incorporating shelters into new structures resulted last year in the addition of 600,000 shelter spaces at a cost to the owners of \$6 million. Officials have gotten the go-ahead to start deployment of a highly sophisticated advance warning system that, by 1977, could cut

the time it takes to sound an alert after first indication of an enemy attack—thus speeding people to shelters—to less than a minute from the present period of up to 30 minutes. (It would take a Russian intercontinental ballistic missile about 30 minutes to strike the U.S.: this country's present satellite detection system could pick up and trail the rocket from time of launch.) The system could also be expanded to sion receivers that could be activated even when the sets are turned off.

Industry and commerce have adopted civil defense programs with enthusiasm. At least 20,000 companies have put records under-ground, and concerns such as Standard Oll Co. (New Jersey) have standby underground head-quarters. Other firms have contingency plans for continuity of management after an attack. Roberts Dairy Co. of Omaha even has a fallout shelter for 217 cows and two bulls.

"Industry looks at civil defense as an insur-ance policy," says Virgil Couch, the agency's director of liaison with industry. "Plus, we stress that if they're prepared for a civil disturbance or the time." riot."

By and large, however, the civil defense program seems stalled. The national survey of new buildings for possible public shelters is some 80,000 buildings in arrears. Government supplies of food, water and medicine for shel-ters are exhausted, with no funds to buy more. Some 300 additional communities that have asked for civil defense programs can't be ac commodated. Training of new workers ha commodated. Train slowed to a trickle. workers has

"In reality," says a candid research report just published by the Office of Civil Defense, "it appears that today's civil defense could only meet the full test of adequacy under one contingency: the contingency that nuclear war does not occur."

After several organizational changes over After several organizational changes over the years, the Office of Civil Deiense today is tucked away at the Pentagon in the office of the Secretary of the Army. Some agency offi-cials charge they have been ignored by the Army; there has been no action yet on a recent study recommending that the head of the agency he placed on the level of an assistant reactions of defause cretary of defense.

secretary of defense. In March 1966, when President Nixon an-nounced deployment of the Safeguard antibal-listic missile system, the president said he had ordered a study of the fallout-shelter program and its relation to the ABM. The study, com-pleted many months ago, also has yet to see destingt daylight.

daylight. "That study has been an excuse to hold us back," says John E. Davis, a former North Dakota governor and now national director of civil defense. "But there has always been a lack of general governmental support—espe-cially at the highest levels." The \$72 million gpropriation for fiscal 1971 is a "bare sustain-ing level," Mr. Davis says. He adds that with-ut immediate strong support the program ing level," Mr. Davis says. He adds that with-out immediate strong support the program from now on will "lose momentum and effec-t veness at a critical rate." He says he would be happy with a spending level of about \$150 million a year, but he is quick to point out that the Soviet Union is helieved to have spent \$500 million annually on civil defense for the past 15 years Vears

The Professional Society for Nuclear Defense is an association of professionals who are greatly concerned with the protection of the U.S. population, its resources, systems, and institutions from the catastrophic effects of nuclear weapons. The Society serves its general communications responsibility through the publication of this bi-monthly newsletter which is distributed in cooperation with SURVIVE magazine. Current membership is 703.

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Picking The Bones In Logic Gap · · ·

DITORIALS

In your town and ours, there occurs a seasonal flurry of "What-Ever-Happened-to-Civil-Defense" newspaper articles. The usual precursor for this activity is a background piece in one of the prestigious dailies such as the New York Times or, in this case, The Wall Street Journal, shown on the opposite page. The typical such feature consists of a few oddities or embarrassments laced into a matrix of financial difficulties and public apathy. The feature generally tends to convey the impression (without really editorializing, of course) that the current state of civil defense against nuclear weapons effects is that of a leaky lifeboat on a ship which never leaves the dock.

A few days after the Journal article appeared one began to see some of the meatier morsels appearing in other papers with an occasional editorial suggesting a "reordering of priorities" away from thoughts of war to those of peace. Some city aldermen or county supervisors, sharp enough to recognize a cheap "strawman" issue when they see one, began suggesting that local public funds are being mostly wasted and that the civil defense staffs are filled with "political payrollers" or even those most suspicious of all persons, "retired military officers."

So it is understandable that an Administration with a keen sense of public pressure (or the lack of it) is not embarking on any reversal of the downward trend in an already inadequate civil defense program. The President is publically pursuing, as he puts it, "an era of negotiation, not confrontation."

The American people, tired and frustrated over a bad trip in Southeast Asia, generally interpret that slogan, "negotiation, not confrontation" as a magnanimous offer of the olive branch by the U S to the Soviet. The chart in the upper left corner of page 2 suggests it is in reality more a recognition of strategic differences between the nuclear powers in 1962 and today. The results of the SALT talks will also reflect this reality. Frankly, when we consider these SALT conferences after reading the JCS Chairman's statement alongside the Journal article and its progeny, we are amazed that the first strategic item put on the block for elimination is a "Defensive" component (ABM) rather than an "Offensive" one (ICBM, SLBM, etc.). Elimination of active defense would virturally require a first-strike policy by all combatants and gives the side with the bigger CD capability (USSR) a great advantage in perceived survivability.

In the Journal piece a research report is quoted as saying "...today's (US) civil defense could only meet the full test of adequacy under one contingency; the contingency that nuclear war does not occur." We don't think it's adequate even for that case, since its relative weakness has a negative effect on the strength of our hand at SALT.

And if negotiation fails - given in 1971 the increased vulnerability of our civilian population to a stronger foe, how far do you think an American President would get today with a Cuban-type crisis ultimatum?



for you & bring two!

It's '71 membership time -

Each national organization would like to think it has a voice in setting the pace of current events. As a practical matter, the strength of that voice depends on both the quantity and quality of its membership. You can help us wake up, clear our throat, and speak out on important nuclear defense issues if you will do just two simple things: sign on for next year's operation in order to add your professional competence to our quality, and send in your nominal dues today to increase the quantity in our very limited treasury.

In addition you are urged to recruit two friends and colleagues for membership, consistent with the requirement that the Society remain technically and professionally oriented within the definition of the recognized professions.

Complete & Return Form on Reverse Side

COMMENT (RESERVED FOR THE MEMBERS)

Surely there are a mumber of aspects of technology that we, as experts, can transmit to general contractors, etc. to provide adequate defense measures in peaceful times. How do we propose to acquire the funds outside of the general membership?

It is possible for our society to grow strong enough to maintain a "lobby" in Washington for the propagation of nuclear design oriented structures as a "legal must" in all areas subjected to defense jurisdiction.

Edward F. Ahneman, Jr.

In response to your letter of May 7, 1971, informing me to "RE-UP" my 1971 dues, I wish to advise you that I am not sure of the amount due on my dues.

GREENWICH, CONNECTICUT

If you would be so kind as to send me the amount due, I will be more than happy to pay my dues.

(\$5.00 ED)

First let me say that I am in complete accord aims and goals of your organization as far as Nuclear Defense Policy is concerned. I have been interested in Civil Defense for some ten years.

Joseph Litvin, P.E.

Dayton, Ohio

However I am declining to join your organization at this time for the following reasons:

First I feel that the creation of another Professional organization is divisive at a time when it is becoming more important for the Professions to speak with one strong voice.

> Articles, Critique, Review, Comment & Opinion Solicited From Members ... - but first,



LOUIS PACHECO

CHICAGO. ILLINOIS

High - Protection - Factor Hasty Rural Shelters*

- by Cresson H. Kearny

To build their Russian-type, below-ground hasty shelters in two days or less, groups of families worked by lantern light until 2:30 a.m., women office workers shoveled until their hands were badly blistered, and 12-year-olds worked 12-hour days! Yet, this was in the summer of 1970, when there was no nuclear crisis. Futhermore, these Eastern Tennessee rural people had little interest in finding out whether average Russians with civil defense training, or average rural Americans (guided only by detailed, written shelter-building instructions) actually could build for themselves shelters having protection factors of 500 or more within 48 hours of beginning work during an escalating crisis. They were motivated simply by a spirit of competition and a desire to earn money.

Shelter-Building Incentives

Answers to these questions are important to civil defense planners. I have been working at Oak Ridge National Laboratory for several years on the literally down-to-earth survival problems of the 60 million rural Americans, and one approach I have been studying is the use of crisis times to improvise shelters for small town and farm residents. To test my crisis concepts, my main problem was to find a way to get average rural Americans to work as hard as they would if their lives depended on it, building shelters of types they had never even heard of before.

The solution to this problem grew out of my having observed in two wars that many people will work almost as hard to save their lives as they will to make money.

Cresson H. Kearny holds a B. S. in Civil Engineering from Princeton and two degrees in geology from Oxford, where he studied as a Rhodes Scholar. His background as a jungle exploration geologist and an inventor of military and civil defense equipment led to his being recruited to join the Civil Defense Research Project at Oak Ridge National Laboratory.

The civil defense work from which Kearny derives the most satisfaction is his invention of a highly effective largevolume shelter ventilating pump. He named it the Punkah-Pump; later OCD re-named it the Kearny Air Pump. A 6foot model of this pump enables a man, pulling it at a work rate of only 1/20th H.P., to force over 4,500 cubic feet per minute of outside air through a typical basement or large-trench shelter. Yet this pump is so simple that an average Boy Scout can build one in a day, using only materials and tools found in most American homes. JULY - AUGUST 1971

Therefore, I selected groups of rural families and/or rural men, and offered them lump sums for building a sketchily described shelter in 96 hours or less - plus a cash bonus if they succeeded in building it in 48 hours or less from the hour they began work.

Of course, many poor country people do not care to become involved in a contract with a big company. Therefore I made only man-to-man verbal agreements with each owner of land on which a shelter was to be built, and promised to pay him in full, with my own money, within 24 hours of his group's completing their shelter. (The builders estimated, usually correctly, that they could make about double their usual hourly earnings - after deducting the value of the trees and other necessary building materials.) In addition, we agreed that only their materials and tools - those available to the builders at the time of the agreement - could be used. And in order that the builders could not select good weather to work in, we agreed on a starting hour several days in advance.

To simulate shelter-building conditions that would be faced by untrained Americans during a major escalating crisis, the committed rural shelter builders were given no instructions or shelter drawings until the starting hour. Then they were given only written instructions of a type that could be printed in a newspaper.

Essential: Detailed Instructions

Preliminary questioning of numerous rural Americans (most of whom are not farmers, and few of whom are construction workers) confirmed the fact that most rural Americans do not even know how to go about efficiently digging a deep trench with their hand tools, or *efficiently* cutting and hauling poles, or efficiently building a simple but out-of-the-ordinary structure. Nor can most read engineering drawings. Therefore very detailed, step-by-step shelter-building instructions - that include perspective drawings - had to be developed and double-checked with different rural groups.

Why Emphasize Hasty Rural Shelter?

Some 60 million Americans live in rural areas - including those in small villages. Most of these rural Americans have locally available space, materials and tools necessary to build for themselves, within a very few days, earth-cov-

^{*}Research sponsored by the United States Atomic Energy Commission under contract with the Union Carbide Corporation at the Oak Ridge National Laboratory. The views expressed in this paper are the author's own and do not necessarily reflect those of the Oak Ridge National Laboratory or the USAEC.



Placing wall poles against the frame of a 20-space Hasty Pole Shelter completed by a group of rural men using motorized equipment in 32 hours (a total of 98 man-hours).

Complete, detailed instructions and drawings for building several different designs of hasty shelters will be included in Kearny's forthcoming Oak Ridge National Laboratory report. *High-Protection-Factor Hasty Rural Shelters*, ORNL-TM-3357. Due to be published in October, 1971, the book may be purchased for \$3 from the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22151. (A small packet of mimeographed instructions and reproduced drawings for a 12-occupant Hasty Pole Shelter is available from *Survive* at a cost of \$1 for those desiring immediate information.)

ered hasty shelters affording much better protection against nuclear war dangers than would the improvised or hasty shelters now described in American civil defense literature. These officially advocated American hasty shelters were designed 8 to 10 years ago, when deliverable Soviet megatonage and missile accuracy were much less than today. Shelters advocated in 1971 should be of types in keeping with the greatly worsened present nuclear threats, that include possible fallout from 25-megaton SS-9 ground bursts. The magnitude of these worsened threats is indicated by the fact that downwind 90 miles from ground zero, a single 25megaton detonation may result in a person in the open receiving over 11,000 roentgens* within the first two weeks. Furthermore, a 25-megaton ground burst produces, at a distance of 8 miles from ground zero, a maximun overpressure of 5 psi and thermal radiation (on a clear day) of some 200 cal/cm²; 15 miles from ground zero, the maximun overpressure is about 1.8 psi and the thermal radiation 50 cal/cm². Thus millions of rural Americans who live near cities likely to be targeted by today's large Soviet weapons should have better blast and fire protection than are afforded by most currently advocated types of shelter.

The present Soviet civil defense system stresses building hasty shelters affording much better fallout, blast and fire protection than do the officially advocated American hasty shelters. In addition, Russian hasty shelters are designed to utilize materials widely available *in rural areas*, to serve as living quarters if the occupants' homes are destroyed, and to be built in a couple of days.

American hasty or improvised shelters are of very simple types that can be built within a few hours either in towns or in the country. It appears likely that during an escalating crisis Soviet authorities may order both rural Russians and evacuated urban Russians to build hasty shelters in a few days. Therefore, it seems prudent for American officials to be prepared to give rural Americans provenly practical instructions to enable them to build hasty shelters which are at least as good as those of the Russians; these hasty shelters could be built in the very few days that the Soviet civil defense system requires to fully prepare Russia for a crucial confrontation or for nuclear war.

Building Hasty Pole Shelters

The group of three small families who had to use only muscle-powered tools had the toughest time building their shelter -a 12-occupant Hasty Pole Shelter of the type shown in the accompanying photographs. The three husbands were: a rather plump traveling salesman, a meat inspector, and a buffing machine operator. Because of this group's inexperience, the three wives each worked only about 45 minutes the first day. Just as they were about to



Construction crew poses inside 20-space shelter after completion.

^{*}Calculated by assuming a 50% fission weapon and a wind velocity of 15 mph, and using the fallout model described in USNRDL-TR-639, and procedures given on page 424 of Effects of Nuclear Weapons, USAEC, 1962. 8

complete their excavation, a thunderstorm dropped 2 inches of rain over everything; shoveling the resultant sticky clay made the work go even slower. And instead of, from the start, following the illustrated instruction sheet on "Cutting and Hauling Logs and Poles," this group first tried unsuccessfully to use a saddle horse to drag poles to their building site.

As a result of all this, this group required the most time of any group to complete their shelter -199 person-hours of work for their 12-space Hasty Pole Shelter. And they failed to win the bonus for completion in 48 hours or less.

In contrast, the five other groups that committed themselves seriously to building either Hasty Pole Shelters or Log-Covered Hasty Trench Shelters all succeeded in com-

pleting their shelters in less than 48 hours.

Two groups of men, using powered equipment, completed two 20-occupant Hasty Pole Shelters in 44 hours and 32 hours by working 94 and 98 man-hours, respectively. Thus only 5.5 man-hours were required per shelter space provided.

In order to have a permanent prototype, a fourth Hasty Pole Shelter was built of creosoted poles that only had to be cut to length. Five city employees of Athens, Tennessee (pop. 13,000), simulated a semi-trained mechanized shelter-building crew; they studied the written instructions and two drawings the day before beginning work on this 12-space shelter. Because of working under extreme heat-wave conditions **Other Shelter Building Tests**

In many wooded areas the soil is so firm that Log-Covered Trench Shelters, with unsupported walls, are practical. Using a design based on my preliminary shelter-building experiments in the fall of 1969, families completed two of these simple shelters in total times of 28.7 and 27.7 hours. The shelter rooms, respectively, were 16 ft long (for two small families), and 8 ft long (for a four-person family). These shelters were built in 92.2 and 69.2 person-hours, using only muscle-powered tools.

For areas where the water table is very near the surface, unskilled workers have built an improved A-frame type of above-ground family shelter. To build the wooden frame, they worked only 19 man-hours, including cutting and haul-



Wives backfilling against the walls of their 12-occupant Hasty Pole Shelter that was built by three families in 199 man-hours, using only muscle-powered tools. These inexperienced builders failed to cut their wall poles to the required 7-foot lengths; therefore they had to cut off the tops of some of the wall poles before putting on the capping board plates (that support the roof poles).

and stopping frequently to wash (due to the creosote burning their sweaty skins) these good workers required 54 manhours to complete this shelter. The elapsed time from beginning work was 39 hours. Per shelter space provided, 5.5 man-hours were required. Creosoted poles obviously are unsatisfactory.

During the same week end, two 13-year-old Athens Boy Scouts built a good Kearny Air Pump to fit the inner shelter doorway, in about 8 boy-hours. They were guided only by the written instructions in ORNI-TM-1745. "Instructions for Building a Homemade Large-Volume Shelter-Ventilating Punkah-Pump"; OCD has renamed it the Kearny Air Pump. Due both to the hot, humid outside air and to the heat from the previously sun-heated poles, this shelter would not have been habitable without forced ventilation. JULY - AUGUST 1971 ing the necessary 7-ft posts. However, if the A-frame of an above-ground Hasty Pole Shelter is to be adequately covered with mounded earth, motorized earth-moving equipment is needed in order for a family to complete the shelter within 48 hours.

For plains areas, a promising wire-catenary-roofed trench shelter is being perfected. A few ordinary fence posts, to make a cross-braced roof frame, and some fence wire are the only structural materials required.

Conclusion

Rural Americans should be given detailed, double-checked instructions to enable them — if necessary during a crisis — to build high-protection-factor hasty rural shelters of the most practical types for their part of America.

9

Increasing Blast and Fire Resistance in Buildings. . . by Department of Defense, Office of Civil Defense, TR-62, December 1970.

Man's chances of surviving the hostile environment created by a nuclear explosion can be enhanced by the application of appropriate design techniques to ordinary buildings. The general principles of such design techniques applied to new

construction is the primary topic of this pamphlet. Many of the principles would require little, if any, additional cost to incorporate, and would not only protect against a nuclear weapon environment, but also against other disasters such as tornados, earthquakes, hurricanes, and large fires. The pamphlet should be recommended as required reading for all architectural and engineering firms engaged in construction.

The pamphlet is well written, complete, and effectively illustrated. A list of references is given for further study.

Neither the cost of incorporating such modifications nor the degree of blast protection afforded thereby is given in the pamphlet. It has been estimated elsewhere that a blast hardness of 50 psi Mid-Lethal Overpressure could be obtained at a cost of about \$60 per space of 10 square feet in basements of fairly large buildings. A federal subsidy program would very likely be required to inaugurate widespread incorporation of blast protection to this extent. Estimates of costs for special-purpose blast shelters, on the other hand, vary from about \$200 to \$300 per space of 10 square feet for the same degree of blast protection. Modifications during construction, obviously, would provide shelters at bargain rates.

Further studies have been made on the time required for obtaining sufficient shelters for the U. S. urban population, based on the rate of new construction. It has been estimated that, with modest subsidization, spaces for 120 million people could be obtained in 10 years at the current rate of new construction.

The pamphlet reviews the effects of nuclear explosions and the environment produced, starting with thermal and prompt nuclear radiation, followed by blast. Fires are caused both by the thermal radiation and by secondary effects of blast damage. The damage from fires can be reduced by simple means such as shielding the interior with opaque fire-proof materials and the use of reflective surfaces. The pamphlet states that solar glass will reduce the amount of energy reaching the interior of the room more than ordinary window glass and will have performed this function efficiently before the blast. This reviewer feels that under some circumstances, the solar glass will undergo sudden expansion due to absorption of the radiation and may crack and fall out before the pulse is over. For example, only half of the total thermal radiation emitted from a 20-megaton weapon 10



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is transmitted in 10 seconds, a period quite long enough for the glass to crack and fall out of place and allow the remaining 50% of the radiation to reach the interior of the room. It may be better to use a glass with highly reflective properties rather than absorptive.

This pamphlet states:

"Smoke containing carbon monoxide and other toxic gases may drift or be blown into the areas below the SURVIVE

fire, although limited experimental data indicate that this may not be a scrious hazard for basement occupants."

Most of the fatalities which occurred in basements during the Hamburg Fire Storm were caused by noxious gases. If the basement area is properly ventilated as described in the pamphlet, such fatalities will be decreased markedly.

The pamphlet suggests that upper story walls and partitions should be made frangible to give way rapidly when struck by the blast, permitting overpressures to equalize quickly around the columns and beams and above and below exposed slabs. Consequently, the high reflected pressures will decay so rapidly that the structure will receive little impulse and the frame and the slabs of the building would remain intact. Hence, the blast shelter in the basement would not be uprooted or covered with the ruble.

A question arises on the protection of people in highrise buildings who will not have time to reach the basement shelter regardless of the most advanced warning techniques from an attack by submarine-launched missiles. If these upper floors have frangible walls, these people may be swept out of the building to die by the impact of falling to the ground. Perhaps simple close-at-hand shelters, such as closets anchored to the slab would hold these people while the walls blow away around them, and afterwards they could evacuate to the basement shelter through stair columns.

Two more points are made in the pamphlet which are worth mentioning here. A ductile structure that undergoes deformation without failure can absorb much more energy than a brittle structure of the same strength. Some techniques for obtaining this ductility in concrete-and-steel structures are given in the pamphlet. The other point is that flat slab floors over the shelter area should have either a column capital or drop panel or both to prevent brittle shear failure around the columns, which could result in the slab punching through at the columns and collapsing into the shelter area.

-Carsten M. Haaland, Oak Ridge National Laboratory

CAMILLE WRAP-UP

Film: A Lady Called Camille (DOD CD 20-274) – 16mm color, 29 minutes.

Besides being by far the best disaster film ever to come down the civil defense pike, *A Lady Called Camille* is a convincer in the eyes of all who see it. It is a professional job. Its drama is deep. Its humor is touching. Its director resorts to poetic license, and in doing so he succeeds in masterfully protraying Camille in her honest role: that of the wildest and most destructive storm ever to ravage the United States mainland.

It's message is clear: in the face of a killer hurricane – move out!

Back of this are the more subtle lessons of safe construction – lessons for responsible government leaders which are being invoked to a degree by government in the Camille areas of destruction.

"Camille" is a *must* for all disaster-conscious communities. It's available – free – through film libraries and civil defense channels. 'Nuff said.

1971 HURRICANES – U.S.A.

| ATL | ANTIC | PACIFIC | | | | |
|--------|--------|----------|-----------|--|--|--|
| Arlene | Fern | Agatha | Francene | | | |
| Beth | Ginger | Bridget | Georgette | | | |
| Chloe | Heidi | Carlotta | Hilary | | | |
| Doria | Irene | Denise | Ilsa | | | |
| Edith | Janice | Eleanor | Jewel | | | |



Fiction: "Full-scale nuclear war would mean the end of organized community life as we know it. And there is no

defense to all-out nuclear attack except the threat that effective counter-strike may destroy the nuclear aggressor as well."

From "The Myth of Arms Control and Disarmament," by Benjamin M. Becker in the April 1971 issue of the *Bulletin of the Atomic Scientists*.



Fact: Nuclear war would have tremendously disruptive effects on target nations. Community life in other nations, however, would not be seriously affect-

ed. Target nations would rebuild and recover, and community life even here would not "end." . . . Effective defense against all-out nuclear attack is well known and clearly defined. It is based on the age-old principle of providing protection against the capabilities of offensive weapons. It is used by other countries whose leaders take the view that protection of their populations is a humane undertaking, not provocative, not negotiable, and worth the investment. As a result nuclear war casualties in these countries would be small fractions of those in the United States. In this way the planned destruction of a serious aggressor by effective counter-strike is only a Pentagon dream.

(It is of course *cheaper* in terms of initial investment to throw up our hands and accept an ivory tower theory of "hostage populations" embraced by no one but ourselves. And this is the logic of our present civil defense position.)

Responsibility for civil defense, just as responsibility for all other governmental activities, rests upon the duly constituted officials of the government whether it be federal, state, county or city.

> -Thornton (Dick) Fleming, Chariman Morgan County Commission (Alabama) 11

JULY - AUGUST 1971

SPOTLIGHT



Oak Ridge Briefings Bare New CD Ideas

Once a year the Oak Ridge Civil Defense Research Project presents the results of its work to an audience whose members come from all over the nation. The conference this year was held on April 12; and its tentative attendee list consisted of eighty persons including scientists, city planners, corporation employees, and members of several government agencies. The morning session consisted of presentations on civil defense while the afternoon was taken up by discussions of urban development research.

The briefing started with some most alarming comments by C. H. Kearny on the effectiveness of Soviet civil defense plans. These plans are revealed in detail in a civil defense handbook published by the Soviet government, primarily for its rural population. This document has been translated into English and is available at a price of \$6.00 from the National Technical Information Service, U. S. Department of Commerce, Springfield, Virginia 22151. Its importance for the Soviet urban population as well as rural is revealed in its statement: "The simultaneous dispersal of workers and evacuation of the plants and institutions will greatly decrease the number of people in the cities; this in turn will sharply reduce population losses in case of a nuclear attack by the enemy . . . a nuclear attack of an unprotected large city may result in the loss of life of as much as 90% of the population. An early dispersal and evacuation could reduce the losses considerably, to a level between 5% and 8%.

Mr. Kearny's primary concern was with the detailed description presented for the construction of Soviet hasty shelters. His conclusions appear in his article "High-Protection-Factor Hasty Rural Shelters" appearing on page 7.

Kearny's talk was followed by a discussion by Eugene Wigner of the relative values of different elements in a system of defense against ballistic missiles. The relative importance of shelters, antiballistic missiles (ABMs), and evacuation procedures were considered. He also suggested that the ABMs be more effectively employed by assigning a probability to the firing of an ABM against incoming missiles directed at different targets. If this is done, the attacker will not know which of his missiles were destroyed by the ABM attack and which have reached their target. He may fire a second missile against a target already destroyed or omit firing a second missile at a target which was defended. This may result in the same decrease of effectiveness of his missiles as would be accomplished by reducing the number he can fire by 70%

Dr. Wigner also suggested the desirability of a U. S. capability of urban counter-evacuation to be undertaken in case of a Russian city-evacuation. This might be used in answer to such a Soviet move enforcing blackmail demands. Edward Teller debated this recommendation from the audience. He pointed out that a move on our part to evacuate our cities might induce a Soviet attack before we could complete the 12 protection of our citizens. He also suggested that evacuation is much easier to carry out in the Soviet Union where the population is much more contolled by the government.

The recent extensive discussion of the need for a U.S. ABM system has raised the question of the best mix of blast shelters and defensive missiles when a given amount of money is available. Mr. C. M. Haaland presented several slides showing the results of his numerical calcuations to answer this question. He noted that some areas of the country will be harder hit than others. In particular, with a national budget of \$80 billion spent on shelters and ABM, fatalities in the Washington area - where they would be highest could reach 30%. Evacuation could, of course, reduce this figure. Mr. Haaland further pointed out that 20 million blast shelter spaces for people could be acquired per year by making relatively minor changes in the design of new buildings (slanting). He observed that an important use of an ABM system is to protect the population long enough to allow shelters to be reached.

The concern that the Oak Ridge project has for the damage caused by electromagnetic (radio) pulses (EMP) produced by nuclear explosions was evident from the two talks by J. H. Marable, H. P. Neff, D. B. Nelson, and J. D. Tillman. These pulses create surges in power lines, control circuits, and other components of commercial power systems. Fortunately these effects resemble, in some ways, lightning strokes. Power companies have had considerable experience with lightning and have provided safeguards against this. Unfortunately EMP surges start more rapidly than those from lightning. This requires modification of some protective equipment in order to get short enough reaction times. Since EMP emission from a bomb is a line-of-sight phenomenon, bombs exploded at high altitudes can create effects many hundreds of miles from the source. This opens the possibility of several surges in power line circuits from from several bombs instead of just one. This makes circuit protection more difficult.

The final paper presented at the morning session was by C. V. and R. O. Chester on the radioactivity hazard introduced by nuclear reactors in the case of nuclear attack. The increasing number of reactors employed in the production of power in this country has raised the question of their being ruptured by the blast of a nuclear bomb and their radioactive contents being spread over surrounding areas. The most vulnerable type appears to be the large sodium-cooled fast breeder reactor. An investigation of a typical case indicates that the likelihood is small that a strong enough blast induce a reactor core explosion. It is 9%. However if the explosion did occur, the fallout pattern of a one megaton bomb would be increased by 40% six weeks after the explosion - less at earlier times. Volatile reactor products escaping from cracks in the casing were estimated to have negligible effects compared to weapons fallout. Of course placing these reactors underground would essentially eliminate any radioactive contamination danger from them.

CIVIL DEFENSE ABROAD

Blast shelter research and testing can be successfully conducted without using nuclear weapons. France did it in the 1950s. And Canada has been doing it north of the U. S. border for the past ten years.

Out of Canadian experiments has come something revolutionary: the "fiberglass reinforced plastic blast shelter."

Canada's EMO (Emergency Measures Organization), teaming up with the Defense Research Establishment Suffolk conducted "Event Dial Pack" at Ralston, Alberta in July 1970. Event Dial Pack featured a 500-ton TNT explosion as a simulation for a larger nuclear explosion. Shelters and shelter components were positioned so as to receive pre-calculated overpressures. (A 50 pounds per square inch shock wave, normally experienced at a distance from ground zero of two miles in the case of a 12-megaton nuclear ground burst, comes at a distance of a little less than 1/10 of a mile in the Event Dial Pack test. And the duration of the shock wave is markedly less.)

Writing of the plastic shelter in the *EMO National Digest*, William A. Johnston (Chief, National Program Evaluation, Canada EMO) and Jon P. Nielsen (Coordinator, Planning for Physical Protection, Canada EMO) say:

"The performance of the shelter located 500 feet from ground zero and exposed to fifty pounds per square inch overpressure from the five hundred ton explosion confirmed findings of simulated tests. Inside overpressure recorded was one quarter of a pound per square inch, a level below the threshold of pain for normal hearing and far below the minimum pressure which would cause burst ear-drums. This pressure level was the same as experienced by observers at a technical observation post, over two miles from the blast. The shelter received a small but acceptable crack in one corner. All components were operative after the blast and dishes remained on the table."

Emphasis is placed on *low-cost* equipment. Preliminary testing of construction panels is done through the use of "shock tube" experiments. Even Dial Pack results showed that the correlation between laboratory shock tube tests and field tests was very close.

Canadian work on the plastic blast shelter is near completion, while work on a "multi-purpose communal shelter" is in an intermediate stage.

Question & Answer CORNER

Q - Must nominations for *Survive* Preparedness Awards be made after the first of the year? Is a city program which is part of a county program eligible?

A – Nominations may be made at *any time*, but nominations for the 1971 awards must reach *Survive not later than* January 20, 1972 in order to permit evaluation by the Judges Committee. Any civil defense organization, irrespective of its relationship with other civil defense organizations, is eligible.

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Coming in the September - October issue -TOMORROW'S CORPORATE SURVIVAL CENTER: BULL PINE RANCH, by Diane Sells