

OCTOBER 1979

VOLUME XII—NUMBER 5

Journal of Civil Defense

SOVIET SUPERIORITY
FLIGHT FOR LIFE

NEUTRON WEAPON FACTS
TIME FOR TEAMWORK





Journal of Civil Defense

Reaching the View of Defense, Philosophy,
and the New Government and Civil Defense

OCTOBER 1979

VOLUME XII—NUMBER 5

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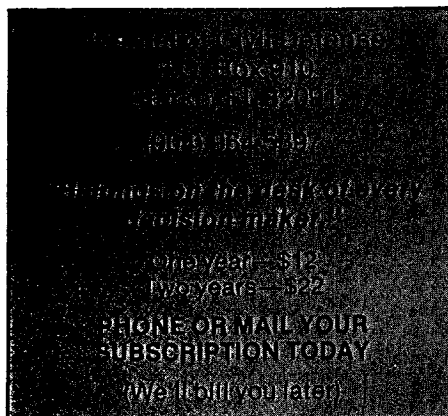
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New Face in Civil Defense

In the newborn Federal Emergency Management Agency, the Office of Plans and Preparedness has the responsibility for most of the functions of the former Defense Civil Preparedness Agency and the former Federal Preparedness Agency. Naturally, civil defenders have been watching closely what goes on in "P & P" and who gets put in charge. The leadership choice could tell a good deal about the fate of nuclear preparedness in the consolidated disaster agency.

In July, it was good news when John W. Macy Jr., newly confirmed Director of FEMA, appointed Clifford E. McLain, who had been DCPA's Deputy Director as acting head of the Office of Plans and Preparedness. McLain, although relatively new to civil defense, had spent most of his career in the defense business, having come to DCPA from the ballistic missile defense program office. His appointment, temporary though it might be, seemed to signal that nuclear civil preparedness was going to be taken seriously in the new agency and not shoved aside for more immediate and politically appealing emergency preparedness tasks.

Just before Labor Day, a permanent appointment to the post of Assistant Director for Plans and Preparedness was announced. The new head of the key organization is Lieutenant General Frank A. Camm. Camm, who is currently a deputy director of the CIA under Stanfield Turner, apparently will leave military service when he joins FEMA. A graduate of West Point, he holds a master's degree in Civil Engineering from Harvard University and another in International Affairs from George Washington University. After graduation from the Military Academy, a stint with the Manhattan Project led to other duties in the Corps of Engineers. In 1962, he joined the staff of the Office of Systems Analysis in the Pentagon under Alain Enthoven, one of McNamara's "whiz kids." Camm participated in the 1963 active-passive defense tradeoff study undertaken at the request of the Secretary of Defense.

He gained his first star in the late 1960s, with assignments on the Army Staff. In 1972, with a second star, he moved to the AEC as Assistant General Manager for Military Application. In 1975, with his third star, he became deputy commanding officer of TRADOC, the Army's Training and Doctrine Command. Then, on to the CIA. In short, Frank Camm has had a brilliant military career, with increasingly challenging responsibilities as he climbed the career ladder. He has a strong technical background in the nuclear field that will be valuable in his new assignment. His nomination is to be forwarded to the Senate in September and he may be on the job shortly thereafter.

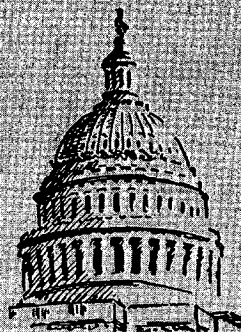
The Camm appointment is another indication that civil defense will not be slighted in the new agency. Indeed, John Macy seems to have recruited solid talent in this area. And Clifford McLain has not been cast aside. He is slated to become Staff Director for Program Analysis and Evaluation in the Director's Office. He will also be the Executive Director of the Emergency Management Council established by Executive Order 12148 of July 20, 1979. Macy chairs this Council, to which the appointments of White House staff members Stewart Isenstat, Jack Watson, and Zbigniew Brzezinski have been announced.

The Multi-Year Authorization

When the House Appropriations Committee turned down the Administration's request for an ever-so-slight increase in the civil defense appropriation this year, it said that it wouldn't believe the Federal government was serious unless the Administration really pushed for a big increase or unless the Congress passed an equivalent multi-year authorization bill. Well, multi-year authorizations are extremely rare events but that has not daunted some members of the Congress. Representative Donald J. Mitchell (R-N.Y.) introduced such a bill last year and repeated the gesture this year with H.R. 571. Then he started getting support. Congressman Ike Skelton (D-Mo.) joined Mitchell in sponsoring a similar bill, H.R. 2704, along with cosponsors Jack T. Brinkley (D-Ga.) and Marjorie S. Holt (R-Md.) Later, that bill was superseded by H.R. 4086, with even more sponsors.

On August 2nd, just as Congress recessed until after Labor Day, seven Senators introduced S. 1660, with similar provisions to the House legislation. The Senate bill was introduced by Senator Harrison H. Schmitt (R-N.M.), who was joined by Senators Howard H. Baker, Jr. (R-Tenn.), Dennis DeConcini (D-Ariz.), S.I. Hayakawa (R-Calif.), Richard Stone (D-Fla.), Strom Thurmond (R-S.C.), and Malcolm Wallop (R-Wyo.) S. 1660, like its House counterparts, is a bill to amend the Federal Civil Defense Act of 1950 to provide for an enhanced civil defense program for the 1980s. It proposes to incorporate into law President Carter's PD 41 policy decisions of a year ago that civil defense should be carried out in such a manner as to enhance significantly the survivability of

(Continued on Page 11)



"Soviet civil defense alone can assure something like victory in any type of strategic war. It can result in a situation in which there are 10 to perhaps 40 times more American fatalities than Soviet fatalities."

Soviet Superiority: A Question for National Debate

Senator Jake Garn

*(Excerpts from article of same title published in the Spring 1979 edition of International Security Review)**

It is now well recognized that a major disparity in strategic nuclear forces will exist between the U.S. and USSR by the early-1980's. While the United States may still have a few more strategic nuclear warheads (if Soviet IRBMs, medium bombers and the Backfire bomber are not counted) the Soviets will very clearly be ahead in everything else — missile numbers (both SLBMs and ICBMs), missile throwweight, total force megatonnage and megaton equivalents, and the number of missile submarines. The Soviets will have something on the order of three times as many heavy and medium bombers as the U.S., a monopoly on IRBMs/MRBMs, and a near monopoly on cruise missiles, and air-ABM-civil defense.¹ The bottom line is that the strategic forces of the Soviet Union will have at least four times the destructive potential as those of the

United States and damage-limiting capabilities that exceed ours by a margin of 10 to 40 times.

SOVIET CIVIL DEFENSE

Soviet civil defense alone can assure something like victory in any type of strategic war. It can result in a situation in which there are 10 to perhaps 40 times more American fatalities than Soviet fatalities.² The Soviet system of urban evacuation can reduce Soviet casualties—by both Soviet and Western estimates—to as low as 3 to 4 percent of the Soviet population.³ However, Soviet civil defense involves far more than city evacuation. "Civil defense in the USSR is a military controlled nationwide program focused primarily on the protection of people (the leadership, essential personnel, and the general population, in that order); continuity of economic activity in wartime; and recovery from the effects of a nuclear attack."⁴ While the program is not a crash effort, the pace has substantially increased since the late-1960's.⁵

Blast Shelter Construction. The most impressive part of the program has been the blast shelter construction effort. As the late General George S. Brown, former Chairman of the Joint

Chiefs of Staff, told the Congress early in 1978:

The principal achievement has been the construction of blast shelters designed to protect all levels of leadership and essential personnel in the labor force. Industrial protection has concentrated on construction of these blast shelters and implemented selective machinery protection measures at a wide variety of industrial facilities. It is estimated that hardened shelters currently exist for a minimum of 10 to 20 percent of the general urban population. There is little doubt about the extensive nature of the Soviet civil defense program.⁶

The critical thing about the population blast shelter construction program is that blast shelters do not wear out, do not become obsolete and are essentially unattackable by the weapons that the U.S. can expect to have after a Soviet first strike in the early-1980's.

General Keegan reports that Soviet population-industrial blast shelters are hardened to 145 psi.⁷ Soviet leadership shelters are hardened to 2,500 psi.⁸ Admiral Turner, the Director of Central Intelligence, essentially confirmed the latter stating, "We believe

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that with reasonable warning a large percentage of the key military and civilian leadership probably would survive a retaliatory attack."⁹

Population Destruction. To give some idea of how much Soviet civil defense has degraded U.S. retaliatory power, it is interesting to look at Soviet population statistics. Twenty percent of the Soviet population equals the combined population of its 50 largest cities.¹⁰ If one attempted to negate Soviet civil defense by targeting increased numbers of smaller cities (ignoring the possibility that they too would be evacuated), one would have to target an additional 350 Soviet cities.¹¹ We would not have the force capabilities to do this.

Soviet strategic targeting is very clearly based on a war-fighting/war-winning/war-surviving strategy. The principal Soviet targets in the event of war will be strategic forces, general purpose forces, political and administrative centers. The Soviets face only 1,054 ICBM silos and only a comparative handful of hardened military targets of any type—military command and control, political command and control, and nuclear weapons storage.

The Soviets do not face any surface-to-air missiles deployed in the U.S. Less than one-hundred Soviet nuclear warheads of comparatively low yield could destroy the entire air defense system of the United States. Another hundred could destroy virtually all military airfields currently maintained. A handful of warheads could destroy all U.S. Polaris/Poseidon and Trident submarines in port. No more than a few dozen Soviet warheads would be required to destroy the major U.S. naval facilities. Many of them could be destroyed by non-strategic forces.

U.S. SURVIVAL

A vital question now emerges. Can U.S. bomber and SLBM forces prevent a Soviet capability to survive, recover from and dominate the world as a result of a general nuclear war? The answer is very clearly, no. By the early-1980's what would the outcome of a general strategic war be?

—Between ten and forty times more U.S. than Soviet population fatalities.

—Destruction of the American government and its economic and military systems, and the survival of the Soviet government and its institutional system.

—A very large disparity in industrial destruction between the Soviet Union and the United States.

—A significant difference between U.S. and Soviet postwar problems. Due to massive fallout from Soviet



Senator Garn: "...there is absolutely no doubt that Soviet civil defense will be highly effective."

weapons, U.S. environmental problems could be acute while there would be only marginal damage to the Soviet environment.

—Nearly total destruction of U.S. strategic and general purpose forces compared with the survival of the majority of Soviet forces.

SOVIET DEFENSES

The ability of U.S. strategic forces to penetrate Soviet targets (including defense suppression) depends upon the effectiveness of Soviet defenses. The evidence now suggests that by the early-1980's the Soviets will have some form of at least a light nationwide ABM defense, and significantly improved defenses against manned bombers.

Because of Soviet civil defense and military hardening the U.S. cannot achieve more than half of the McNamara assured destruction levels of the 1960's or the levels in Schlesinger's revision of the 1970's. McNamara defined "assured destruction" as the ability to destroy some 25 percent of the Soviet population and one-half to two-thirds of Soviet industry. Schlesinger redefined the objective of assured destruction in terms of damage to critical Soviet economic and political assets required for the war effort and recovery and the ability to attack some Soviet military forces. He also added a requirement that U.S. forces should not be inferior to those of the Soviets and no element should be vulnerable to surprise attack. We can-

not wipe out Soviet population, administrative, or strategic military assets in a retaliation. The only remaining element of both the McNamara and Schlesinger formulas is the industrial destruction criterion; and Soviet civil defense may have already made the assured destruction of the Soviet Union dubious.

Industrial Destruction. Throughout the 1960's the U.S. government annually issued estimates of the industrial destruction U.S. strategic forces could inflict on the Soviet Union. As O. C. Boileau, Vice President of Boeing, points out, "U.S. estimates of the industrial damage our missiles could inflict are based on the amount of industrial roof space which would be destroyed. Interestingly enough, Soviet plans show little attempt to protect roof space. But within the buildings they have worked out ways to protect machinery through the use of permanent protective structures, enclosures, hoods and housings, canopies and sandbags."¹² With almost total survival of the urban population as a result of sheltering and evacuation, the ability of the Soviet Union to reconstruct the economy after a retaliatory attack is critical.

The Soviets are engaged in the gradual dispersal of their industry. More important are the hasty hardening techniques. Using such techniques, a Boeing study concluded that over 50 percent of the industrial equipment in the primary target area would survive.¹³

With sufficient effort, machinery can be hardened to withstand blast overpressures of 150-300 psi.¹⁴ If such techniques were used, "The amount of machinery destroyed would be so limited that it would not be essential to rebuild damaged machinery. They would compensate for the level of destruction simply by going from two workshifts per day to three workshifts per day."¹⁵

Soviet civil defense cannot preclude large-scale damage to the Soviet industrial base. Life will not be particularly pleasant in the aftermath of an all-out U.S. retaliatory attack. Neither was it pleasant in the aftermath of World War II; but the Soviets survived and rebuilt. Their civil defense system may be able to reduce destruction sufficiently to allow the reconstruction of the Soviet economy within five or ten years. The situation could be even more favorable to the Soviets if, as is likely, they occupy Europe almost intact. At the end of the Second World War the Soviets dismantled entire factories and shipped them back to the Soviet Union. In the aftermath of the Third World War they are likely to do just the same and make extensive use of slave labor in the reconstruction effort.

The disparity between postwar U.S. and Soviet conditions would be even greater after a limited strategic exchange which terminated short of a massive countervalue attack. In this situation there is absolutely no doubt that Soviet civil defense will be highly effective.

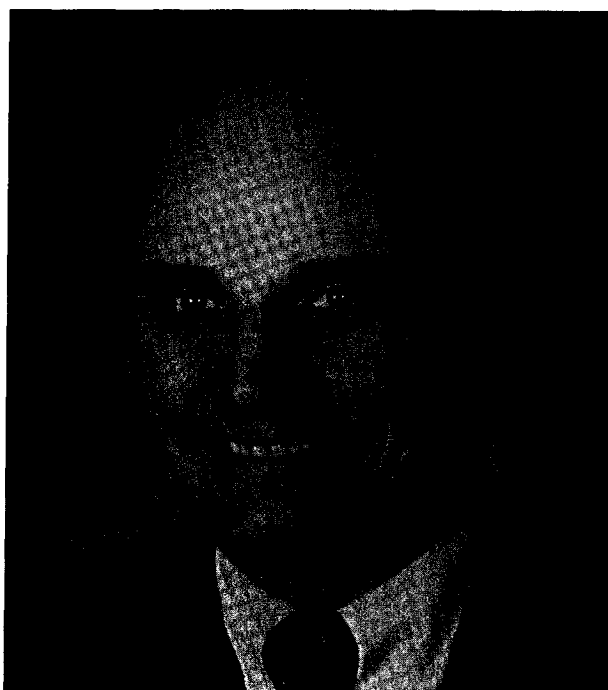
CONCLUSION

U.S. strategic forces in the early-1980's cannot assure the destruction of the Soviet Union after absorbing a first strike. Even today we cannot assure the destruction of the Soviet population or make much of a dent in the Soviet strategic force posture. By the early-1980's two-thirds of the forces which we can now count upon surviving a Soviet first strike will be vulnerable. Soviet forces over the next three years will more than double the current threat creating a situation in which the Soviets can destroy about 80 percent of our retaliatory capability and maintain a massively superior strategic reserve to deter a U.S. countervalue response.

Dr. William R. Van Cleave and Seymour Weiss, both members of the in-

telligence "B Team" which provided a timely warning of the impending Soviet threat, now observe:

Events have proved the B Team right, but U.S. policy appears to assume Team B wrong. We wonder what evidence is required to suggest to the American people and to the Administration that our security is in the process of being endangered and its preservation requires an awareness and an effort far beyond that which now exists.¹⁶ □



Senator Jake Garn of Utah

FOOTNOTES

1. House Appropriations Committee, *Department of Defense Appropriations for 1977* (Washington, D.C.: Government Printing Office, 1976), p. 195. Paul H. Nitze, "Consequences of An Agreement," (Mimeo: Committee on the Present Danger, 1978), passim. William R. Van Cleave, "Soviet Doctrine and Strategy: A Developing American View," in Lawrence Whetten, *The Future of Soviet Military Power* (New York: Crane, Russak & Company, 1976), pp. 52-56, Edward B. Giller, "Nuclear Technology In Support of Our Strategic Options," *Air University Review* (November-December, 1976), pp. 27-28.
2. Nitze, "Consequences of an Agreement," p. 8. S. T. Cohen and E. F. Black, "SALT and the Public Law," *National Review*, (January 20, 1978), p. 83.
3. House International Relations Committee, *U.S.-USSR Relations and the Strategic Balance*, p. 33. John Charles Daly, *Who's First in Defense—the U.S. or the USSR?* (Washington, D.C.: American Enterprise Institute, 1976), p. 29.
4. George S. Brown, *United States Military Posture for FY 1979*, pp. 39-40.
5. *Ibid.*
6. *Ibid.*
7. "Strategic Balance: Trends and Perceptions," p. 9.
8. *Ibid.*, p. 8.
9. *Allocation of Resources in the Soviet Union and China—1977*, p. 41.
10. *Department of Defense Annual Report Fiscal Year 1979*, p. 49.
11. *Ibid.*
12. O. C. Boileau, "Soviet Civil Defense—Prelude to Nuclear War?" *National Defense*, (May-June 1977), p. 479.
13. *Ibid.*
14. U.S. Congress, House Armed Services Committee, *Civil Defense Review* (Washington, D.C.: Government Printing Office, 1976), p. 251.
15. *Ibid.*, p. 252.
16. William R. Van Cleave and Seymour Weiss, "National Intelligence and the USSR," *National Review* (June 23, 1978), p. 780.

NEWS BROADCASTERS "DISCOVER" DEFENSE

TV Guide reported (August 25) that major networks show signs of waking up to the need for national defense planning. The subject, says reporter Morton Kondracke, has long suffered because it is too complicated for instant audience appreciation. Kondracke gives good marks to Walter Cronkite of CBS and the PBS MacNeil/Lehrer Report. NBC and ABC are progressing at a slower pace. "But these are only signs and hopes," says Kondracke. "For the moment television hasn't begun to tell the public all it needs to know about America's ability to defend itself."

SPACEMAN SCHMITT INTRODUCES SENATE CIVIL DEFENSE LEGISLATION

As reported on the front page of the August issue of the *USCDC Bulletin* (see also Capital Commentary, p. 3), former astronaut Senator Harrison H. Schmitt (R-NM) on August 2nd introduced Senate Bill 1660 calling for a sharply upgraded civil defense. It received strong bipartisan support.

"This bill," said Schmitt to the Senate, "is based on improved management of the resources presently committed to civil defense efforts, increased education activities, research and development in civil defense systems, and effective planning in anticipation of various threats to lives and society."

"I might say, Mr. President, that in my previous career in the space program this anticipation of various possible problems was one of the most important reasons why we were successful in that effort. We were prepared not only for those potential problems but for others that occurred that we had not anticipated."

One of the bill's co-sponsors, Howard Baker (R-TN) linked civil defense to SALT II and deterrence.

"I welcome this development," declared Baker, "because I have for several years expressed my concern with the inadequacy of our Nation's civil preparedness and my belief that civil defense is an essential element of a credible defense posture."

At Baker's request a *Washington Post* article by Eugene Wigner and Edward Teller was printed in the Congressional Record. The article included the following observations:

We have no defense against their missiles; they have missile defense at least for Moscow. They also have widely spread anti-aircraft defenses; we have virtually none.

But the gravest disparity prevails in the area of population defense. They have an elaborate civil defense system; ours is tragically ineffective. They spend more than \$1 billion annually on civil defense; our civil defense budget is less than one-tenth of this. Will this improve when all of our emergency relief efforts come under the same roof? We hope so.

NUCLEAR CHEAPEST

In 1978, operating nuclear power plants widened their cost advantage over coal and oil, according to an AIF survey of utilities operating nuclear power plants. Total busbar costs (including fuel, taxes, interest, depreciation, maintenance, etc.) reported are tabulated below:

	Total Generation Costs		
	c/kwhr		
	1978	1977	1976
Nuclear	1.5	1.5	1.5
Coal	2.3	2.0	1.8
Oil	4.0	3.9	3.5

Last year's nuclear generation, says AIF, saved more than \$3 billion, when comparing weighted cost averages of nuclear with oil and coal. Had that amount of power been generated by additional oil-fired generation, it would have required an additional 470 million barrels of oil. Importing that much oil, at the new OPEC rates, would add \$6 billion to our trade deficit, thereby aggravating both our national security and inflation problems, the AIF notes.

—from *Nuclear Legislative Advisory Service Newsletter*

KREMLIN SCENARIO

On August 19th the *Fort Worth Star-Telegram* featured an eye-opening account of a mythical 1984 Kremlin meeting called by new Soviet leader Vladimir Ivanov (Brezhnev had died in his sleep a few months earlier).

"Doomsday" is by *Washington Post* writers Robert G. Kaiser and Walter Pincus.

Ivanov's pet idea is the exploration of an "out-of-the-blue" nuclear attack on the United States. Colonel Lev Perishtein, Ivanov's strategic think-tank team leader, briefs a select Politburo group:

Let me outline, says Perishtein, our analysis of how a surprise attack could be launched against the imperialist camp. First, we must strike without provocation, when the imperialists believe our relations are on a sound, peaceful footing.

In that way, Perishtein reasons, delay in transmission of the attack report, presidential waffling, confusion, disbelief and reluctance to respond will work to upgrade chances of a successful attack. Perishtein is questioned. There is some doubt about the hardness of American missile silos. And about missile accuracy (due to a deflection called "bias" in an over-the-pole route). Lessons are drawn from American studies on what would happen. America's president is totally unprepared. Evacuation is not possible (for either side). Retaliation is a suicidal option.

But if he holds back, says Perishtein, and tries to negotiate, he can save his country—maybe even save the world. American presidents are romantics. We assume he will opt for negotiation, which of course will amount to surrender.

At the meeting's close no decision has been reached. None was intended this early. It is to reconvene the following week for further deliberations.

UPCOMING

- Sept. 30- USCDC Annual Conference,
- Oct. 5 New York City
- Nov. 2-3 Accuracy-In-Media Conf., Bethesda, MD
- Nov. 5-9 Career Graduate Seminar, FEMA, Battle Creek, MI
- Nov. 11-16 American Nuclear Society Meeting, San Francisco
- Nov. 26-28 2nd World Conf. on Pre-Hospital Care, New Orleans
- June 8-13 American Nuclear Society Annual Conf., Las Vegas

Only in the past decade have the nation's medical authorities and public safety experts realized that thousands of lives can be saved annually with a systematic approach to established principles of emergency health care. Of special note among efforts in this direction is the "Flight For Life" emergency medical air service sponsored and managed by Denver's St. Anthony Hospital Systems.

FLIGHT FOR LIFE

Nick DiTirro
George L. Seaton

"Flight For Life" helicopter picks up victim of hunting accident in remote section of Colorado. Expert emergency medical treatment and prompt evacuation to hospital care save another life.

A few miles down the Rocky Mountain slope from the Continental Divide in Colorado Big Thompson Canyon is a favorite garden spot for summer vacationers along the lazy Big Thompson River.

It was that is.

On July 31, 1976 an unprecedented rainfall from a heavy cloud formation, stalled just east of the divide, dumped 14 inches in 6 hours on the slope, ballooned all the north tributaries of the Big Thompson. This in turn provoked a mammoth surge of water downstream which later that evening turned suddenly into a massive, exploding 30-foot wall as it was squeezed into the narrow confines of Big Thompson Canyon.

Roads, cars, bridges, trees, trailers, houses, tents, people, animals and all their impedimenta were tumbled pell-mell through the defile in a maelstrom of sudden fury that swept everything with it.

Over 140 people were killed. Hundreds more lay helpless wherever the raging torrent had hurled them and deposited them. Had not Denver's "Flight For Life" thrown its rescue and medical muscle promptly into the task of rescuing, treating and evacuating the injured the death toll would have been much higher. Trained helicopter medical-rescue teams from St. Anthony Hospital Systems logged long heart-break hours to bring 150 injured 50 miles south to hospital care in the

Denver area. Later they were given the aviation "Helicopter Heroism Award" for their "heroic action, selfless devotion to duty, medical expertise and flying skills."

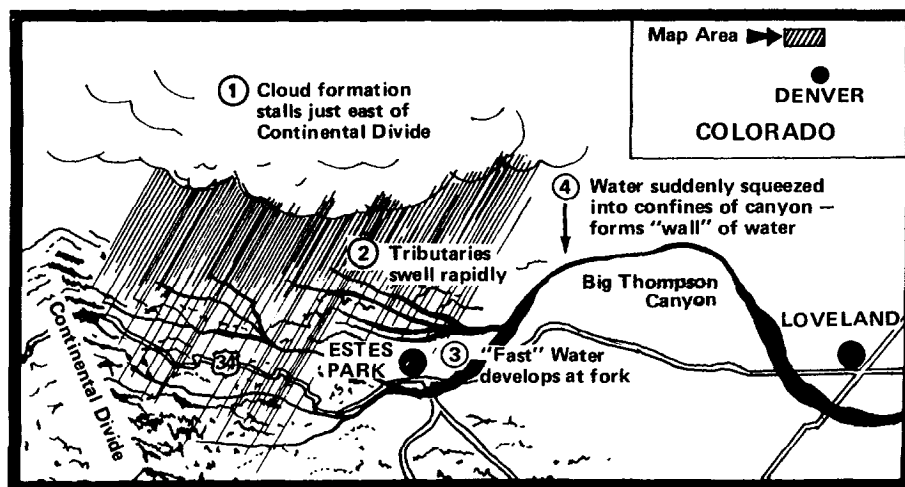
That's what Flight For Life is all about. Much more. Its ability to operate day or night, to respond around-the-clock, to fly into improvised landing areas, to operate at "hover" positions when necessary, to drop in rescue workers in difficult mountain rescue situations and to maintain sophisticated communications with base operations and medical advisors give it a built-in flexibility and capability in the very toughest of rescue scenarios.

Many types of serious trauma, including that which occurs daily on the highways, in mountainous terrain, as well as in industry, make an emergency medical air service a critical part of patients' chances for survival.

The vastness of the Colorado and Rocky Mountain region creates special isolation for many communities, making modern emergency medical care possible only when fast efficient transportation and expert care enroute to a well-equipped hospital is readily available.

The delivery of emergency medical services to the patient is vital in the health care system of rural and remote areas—even in urban environments.

Flight For Life was set up as an emergency medical air service in 1972 at Denver's St. Anthony Hospital Sys-



HELICOPTER AND FIXED-WING FLIGHTS (Flight For Life—St. Anthony Hospital Systems)

	Helicopter	Fixed-Wing	Total	Average flights per day
1972 (2 mos.)	71	—	71	1.14
1973	848	105	953	2.61
1974	1172	335	1507	4.14
1975	1508	454	1962	5.38
1976	1600	505	2105	5.76
1977	1501	536	2037	5.58
1978	1443	620	2063	5.65

FLIGHT FOR LIFE STAFF

Helicopter pilots	4
Fixed-Wing pilots	8
Backup fixed-wing/helicopter pilot	1
Flight nurse supervisor	1
Flight nurses	14
Emergency medical technicians	8
Physician medical coordinator	2
Office personnel	3
Dispatchers	11
Communications Center manager	1
Radio-electronics engineer	1
Director of flight operations	1
Total	50

tems. Primarily an answer to rugged Rocky Mountain terrain and winter highway blockages it can get emergency medical aid to patients within minutes and can get them to hospital care hours or days before ground action could do the job.

Flight For Life's two Alouette helicopters—designed by French industry for Alpine rescue—are ideal for the Colorado mission. Each can carry two patients, a pilot, a nurse and a doctor (or another nurse). Each is equipped with streamlined kits of emergency medical equipment and supplies.

For longer flights two fixed-wing Merlin IIA turbo-prop planes stand ready 24 hours a day for take-off at nearby Stapleton International Airport. Each Merlin can carry three patients, a pilot, a nurse and a doctor.

A total operations crew of 50 specially-trained, rigidly qualified medical,

**“... emergency medical aid
to patients within minutes ...
hospital care hours or days
before ground action could
do the job.”**

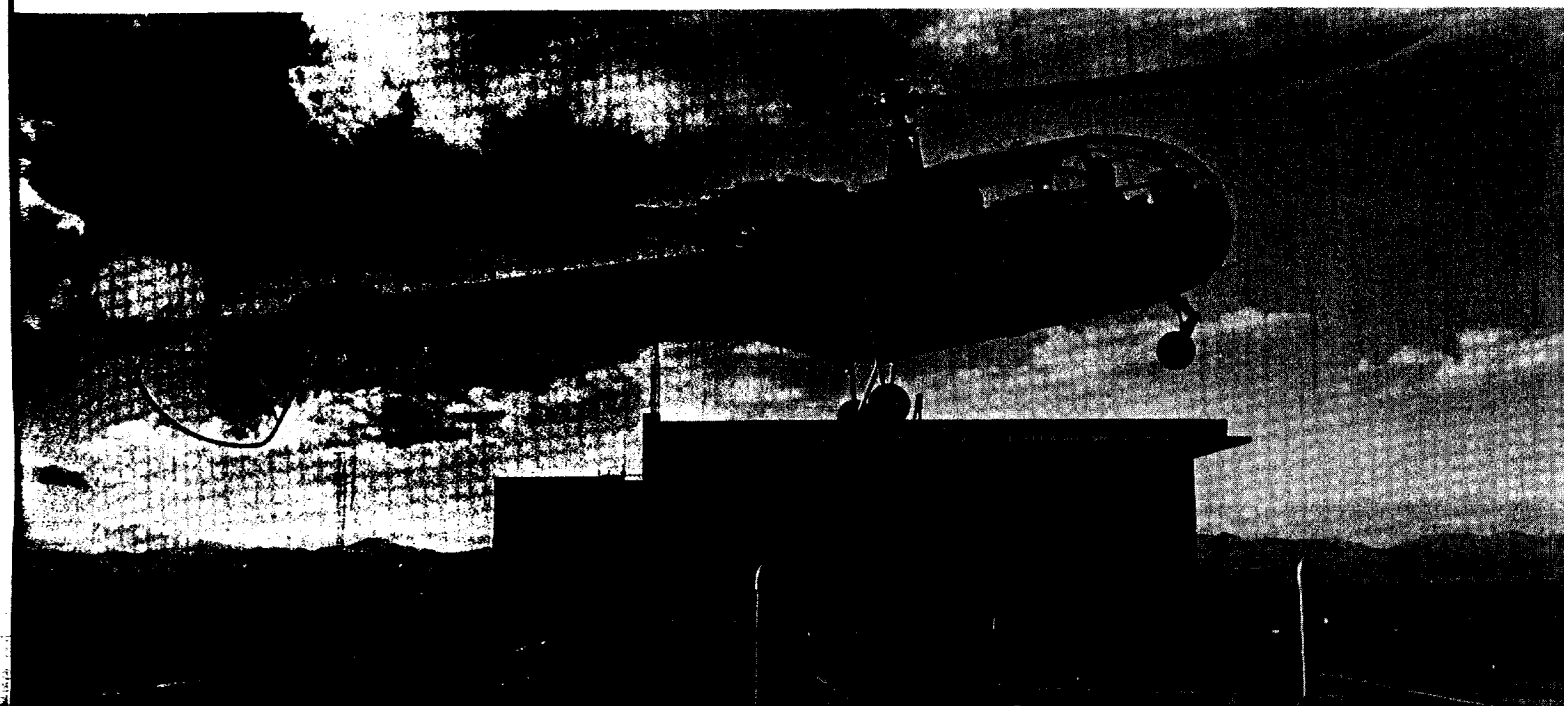
communications and flight personnel man the system. One helicopter is based on the roof of St. Anthony Central Hospital. The second stands by at a ground pad seven miles to the north.

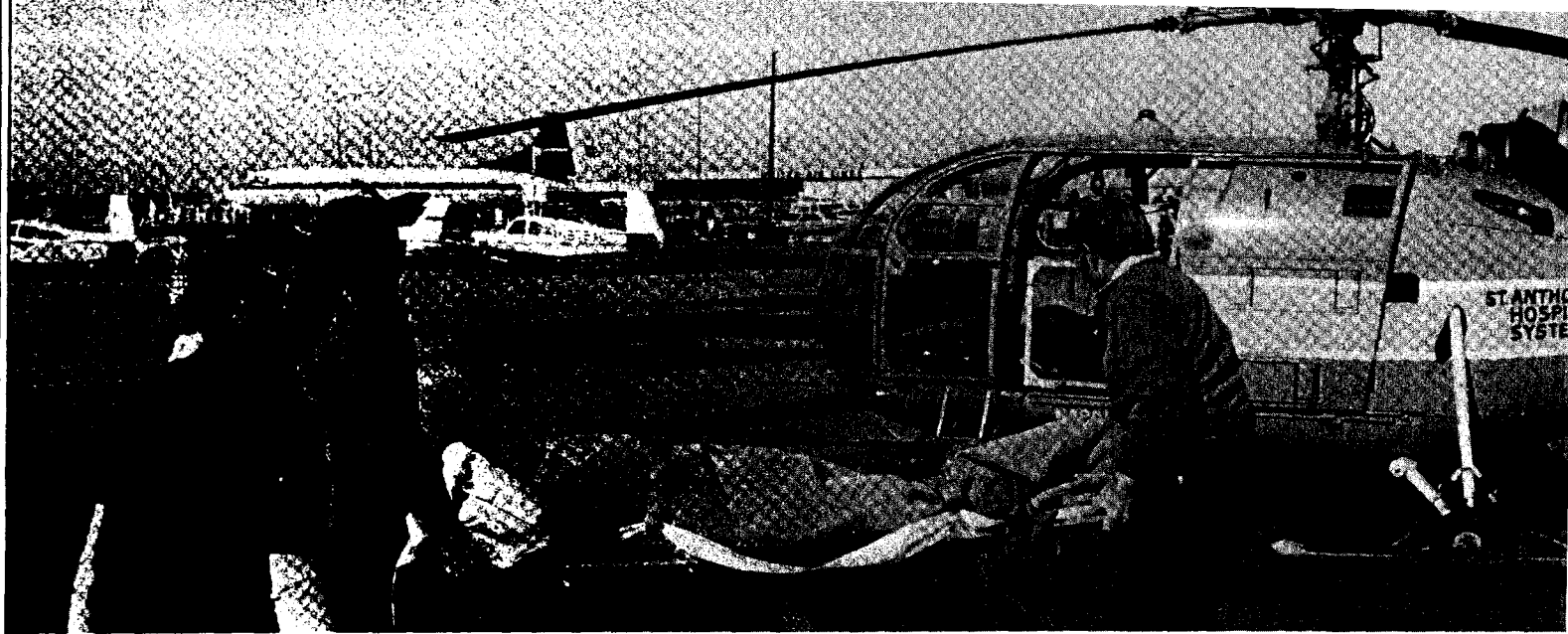
Within three minutes of an emergency call a rescue helicopter can be in the air. The two Merlin fixed-wing aircraft can be airborne within 20 minutes of an alert.

To date Flight For Life has completed over 12,068 flights, over 2,918 of these by the Merlins. The Merlins have flown into over 150 cities and communities in 30 states, Canada and Costa Rica.

The helicopters serve 170 cities, towns, communities, ski areas, national parks, recreational areas, industrial sites throughout the state of Colorado—plus 70 Colorado hospitals.

Within 45 minutes (bumpy road would have taken 4½ hours) “Flight For Life” helicopter arrives with victim at St. Anthony Hospital in Denver.





In another rescue operation patient is transferred from "long haul" fixed-wing plane to "Flight For Life" helicopter for quick shuttle to hospital.

The Flight For Life communications center functions as a dispatching and coordinating center for all aircraft flights, ground ambulance transfers, and transfer facility for the relaying of medical and operating information to appropriate hospitals. It receives all calls for service on a state-wide toll-free phone plus six direct incoming phone lines. Recently a nationwide emergency phone number—1-800-525-3712—was put into service. 22 base radio frequencies help to provide radio and phone patching with 85 separate agencies.

During the past seven years 165 high altitude mountain rescue helicopter flights were flown at the request of official agencies.

Flight For Life helicopters and crews have made immediate response to seven airport plane crashes. Helicopters have responded to ten outlying plane crashes, four major mine and industrial explosions. They also handled critical victims of the Vail ski gondola crash in March 1976.

The delivery of emergency medical services by helicopters with critical care practitioners and life-support equipment aboard to the scene of illness or injury has saved an enormous number of lives. It will save countless more. The Flight For Life system has proved beyond all doubt to be efficient, workable, cost effective and humane.

The fact that Flight For Life experience embraces the single casualty situation as well as the more complicated multiple casualty operation (Big Thompson Canyon, for one example) demonstrates that this type of emergency service is here to stay and can only grow to serve more areas.

Flight For Life stands as an outstanding and invaluable example of what a community can do to develop a practical air rescue service.

It deserves careful analysis by other localities sensitive to improving emergency medical techniques. □

EMERGENCY INFORMATION —CHECKLIST—

PHYSICAL SITUATION

1. Emergency Location
2. Landing Area
 - (A) Location
 - (B) How Marked
 - (C) Altitude
3. Terrain—Obstacles
4. Visibility
5. Weather Conditions
6. Wind Speed—Direction
7. Temperature
8. Special Conditions—
Instructions

MEDICAL SITUATION

1. Emergency Date—Time
2. Requesting Person—
Agency
3. Number of Patients
4. Time Factors—
5. Degree of Emergency
6. Condition of Patients
 - (A) T.V.
 - (B) Tracheostomy
 - (C) E.T. Tube
 - (D) Cast
 - (E) Traction

"Need To Know" Mission Data

Local government, safety and health authorities and hospitals are invited to contact Flight For Life for information on organization and operation of community air rescue units. Contact:

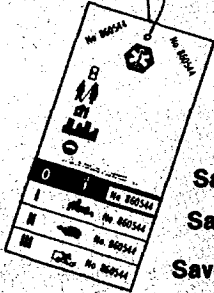
Flight For Life
St. Anthony Hospital
Systems
 4231 West 16th Ave.
 Denver, CO 80204

The film is available on loan from: Motion Picture Service—NOAA, 12231 Wilkins Avenue, Rockville, MD 20852. It may be purchased from: Capital Film Laboratory, Attn. Kip Livingston, 1540 Broadway, New York, NY 10036. The price is \$58.95 which includes plastic reel, plastic shipping case, and UPS shipping charges.

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CAPITAL COMMENTARY

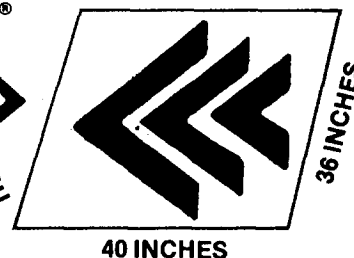
Continued from Page 3

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At the close of the 1978 training year, Gen. A. I. Arutin, head of USSR Civil Defense, made the following appraisal of Soviet Civil Defense in his annual report:

"As we see, our civil defense is pursuing highly humane aims and is called upon together with the country's Armed Forces to protect the population from weapons of mass destruction. We will be carrying out this mission even more persistently and stubbornly, no matter what imperialist propaganda says in regard to this."

He set goals for the 179 training year which, if they are being attained, will result in the creation of about 5000 new "training villages" and the improvement of the integrated installation exercise program. He put particular emphasis on the latter when he wrote:

"Among the multitude of tasks which we must accomplish in the new training year, conducting integrated facility exercises must perhaps be put in the forefront. Experience allows us to assert that they have been and remain the fundamental most effective form of preparing a national economic facility and the population for protection from modern means of armed conflict."

The Soviet Civil Defense training year starts on Dec. 1 and ends on Sept. 30. The 1979 year is drawing to a close. In a few months the appraisal of this year's program will be forthcoming, and it will be interesting to see if significant progress in these areas is claimed.

The Soviets constantly remind the world of their "peace-loving" nature and assure that they have no intention of "lifting a sword against anyone." As a result, they insist that U.S. defense spending and civil defense efforts are unnecessarily excessive and that additional attention is superfluous. However, internal publications sound an entirely different tone in regard to both intentions and defense of the Soviet homeland:

"The more destructive wars become, the stronger the demand today for a peaceful transition from capitalism to socialism."

Indeed, the USSR does not wish to "attack" anyone. It is quite clear that they prefer to attain the "transition" by other means, and these "peaceful" approaches are solely for that purpose. They make no secret of their ultimate goal.

U.S. efforts to maintain an adequate defense posture and to provide citizens with a reasonable civil defense program are always labelled as "war mongering," "aggressive," and essentially "damaging to detente." However, the following is typical of what their military leaders feel is the logical approach for their own country:

...they [the men of the Soviet Armed Forces] understand that steady strengthening of vigilance and combat readiness is the most important guarantee of preserving lasting peace and a warning to those who, having forgotten the lessons of history, contemplate plans for a new war."

From Russia and China: New emphasis on hardcore "humane" civil defense as an effective war preventative and survival technique.

The thesis of the *elimination* (emphasis added) of one opposite [capitalism, i.e., U.S.] in no way is identical to a demand for its military destruction. The death of the old and the victory of the new are, of course, the law of history, but the liquidation of the old can be carried out completely in a peaceful form as well, without war.

As a rule, the Chinese go about their war preparedness activity without talking about it. However, recently they have been reporting this activity more frequently than they have in the past. In February they held a 10-day "Air Defense Conference" in Xining, Qinghai Province, to "quicken the pace of construction in people's air defense and preparedness against war." Another such conference, this one

based 6 days was reportedly held by the Shanxi Provincial Committee, and it was stipulated that shelter systems be completed and put to peacetime use to serve production and the people's daily needs.

Another article reports on the excellent underground facilities in Shanghai where numerous civil defense works to be used in either war time or peacetime are located. In this underground city are a clothing factory, a 200-seat restaurant, a hospital (operating rooms, X-ray rooms, preparation rooms, supply rooms, and pharmacies), an oil storage depot, and a vegetable market and storage warehouse. In March, another provincial conference was held in Nanchang, Jiangxi Province. Here it was stated that civil defense is

an important part of implementing the strategic principle of active defense and an important strategic measure, under conditions of modern warfare, for preserving ourselves and wiping out the enemy.

And, finally, the province of Yunnan held a conference on People's Civil Defense Work at Kunming in May. Here, attendees visited some of the civil defense projects in Kunming Municipality, commended and rewarded a number of advanced units and individuals who have done well in promoting civil defense work and formulated plans and made arrangements for future civil defense work. □

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7. Nanchang Jiangxi Provincial Service in Mandarin, Mar. 7, 1979 as reported in FBIS-CHI-79-048, *Daily Report, People's Republic of China*, Mar. 9, 1979, pp. G1-2.
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FEDERAL EMERGENCY MANAGEMENT AGENCY-STAFF COLLEGE Battle Creek, Michigan 49016 SCHEDULE OF COURSES FOR FISCAL YEAR 1980

October—December 1979

Oct 15-18	Industry / Business Emergency Planning (I/BEP)
Oct 22-Nov 2	Fallout Shelter Analysis (FSA)
Nov 5-9	Career Graduate Seminar (CGS)
Dec 3-14	Civil Preparedness Career Development Program—Phase III

January—September 1980

Feb 4-15	Civil Preparedness Career Development Program—Phase IV
Mar 10-21	Civil Preparedness Career Development Program—Phase III
Mar 24-27	Industry / Business Emergency Planning (I/BEP)
Apr 14-25	Fallout Shelter Analysis (FSA)
Jun 2-13	Civil Preparedness Career Development Program—Phase IV
Jun 16-27	Civil Preparedness Career Development Program—Phase III
Jul 14-17	Industry / Business Emergency Planning (I/BEP)
Jul 21-25	Career Graduate Seminar (CGS)
Jul 28-Aug 15	Multiprotection Design Summer Institute (MDSI)
Aug 18-29	Civil Preparedness Career Development Program—Phase III
Sep 22-Oct 3	Civil Preparedness Career Development Program—Phase IV

For additional information concerning Staff College courses, and Regional Field courses, contact your local or State Emergency Preparedness Office, FEMA Regional Office, or FEMA Staff College, Federal Center, Battle Creek, Michigan 49016, Area Code (616) 962-6511, Extension 6161.

Staff College Summary of Courses Fiscal Year 1980

October 1, 1979—September 30, 1980

PHASE III	PHASE IV	CGS
Dec 3-14, 1979	Feb 4-15, 1980	Nov 5-9, 1979
Mar 10-21, 1980	Jun 2-13, 1980	Jul 21-25, 1980
Jun 16-27, 1980	Sep 22-Oct 3, 1980	
Aug 18-29, 1980		
I/BEP	FSA	MDSI
Oct 15-18, 1979	Oct 22-Nov 2, 1979	Jul 28-Aug 15, 1980
Mar 24-27, 1980	Apr 14-25, 1980	
Jul 14-17, 1980		

Wigner-Bergman CD visits to Capitol Hill Offices continue to produce surprises. Opposition can, under Wigner candor and logic, soften and bend—sometimes even turn as far as agreement or support of protective measures.

TIME FOR TEAMWORK

A Staff Report based on notes by special consultant Susan Bergman

On July 17th and 18th the indefatigable Eugene Wigner called at 10 senatorial offices and consulted with two members of the House. This was the third series of calls to fulfill appointments arranged by Susan Bergman.

The issue again: civil defense. Unlike Wigner's first visits during a February blizzard the snow outside had melted. No surprise. But it appeared that there was also considerable thaw inside the offices of some of the CD doubters. That was a surprise. It proved that talking out the matter of citizen protection with reasonable, circumspect solons can bring about changes in viewpoints—as it should. Further it was a strong and sound argument for citizen involvement, citizen contacts by letter, by phone or in person.

For instance, Wigner called on Senator Henry Bellmon (D-OK), a self-styled critic of civil defense. But Bellmon's opposition is based mainly on the bureaucratic trap that civil defense finds itself snared in. This position gets very close to that of many strong civil defense advocates. So, with a more realistic civil defense program Bellmon's objections could well turn into support. More information was needed for the senator.

"If they haven't gotten around to telling us (the Senators) what to do in case of nuclear attack, then who have they told?" That Bellmon challenge opens the doors for dialogue.

Calls by Dr. Wigner and Ms. Bergman, July 17-18, 1979:

Senator Orrin Hatch (R-UT)
 Senator Richard Schweiker (R-PA)
 Senator Dennis DeConcini (D-AZ)
 Senator Henry Bellmon (R-OK)
 Senator George McGovern (D-SD)
 Senator Edward Zorinsky (D-NE)
 Rep. Philip Crane (R-IL)
 Rep. Donald J. Mitchell (R-NY)
 Carl Blake, Steve Harris— aides to Senator Donald Riegle (D-MI)
 Jeff Bergner, aide to Senator Richard Lugar (R-IN)
 Douglas Miller, aide to Senator Larry Pressler (R-SD)
 Ms. Louise Hoppe, aide to Senator John C. Stennis (D-MS)

Calling on South Dakota's liberal Senator George McGovern (D) was not quite as anticipated. It was not like walking into the lion's den. In fact, McGovern told Wigner that he would appreciate very much obtaining more information on civil defense, that his mind was open.

Even MAD (Mutual Assured Destruction) advocate Senator Edward Zorinsky (D-NE) mellowed his hard-line stand when presented with the facts of civil defense as it relates to deterrence. Near the end of his Wigner interview he frankly acknowledged the possible value of a sound civil defense.

Senators Dennis DeConcini (D-AZ), Orrin Hatch (R-UT) and Richard Schweiker (R-PA) strongly supported the Wigner position. DeConcini favored a

BOX SCORE

(Wigner-Bergman Initiative—
 Feb., Apr. and July, 1979)

	Con- tacts	Pro- CD	Anti- CD	Neu- tral
Sen. (D)	13	8	2	3*
Sen. (R)	15	14	0	2*
Reps. (D)	2	2	0	0
Reps. (R)	1	1	0	0

*Senators Bellmon, McGovern and Zorinsky, previously anti-CD, are here counted as "neutral" in view of their comments during the Wigner-Bergman interviews.



Senator George McGovern and Wigner

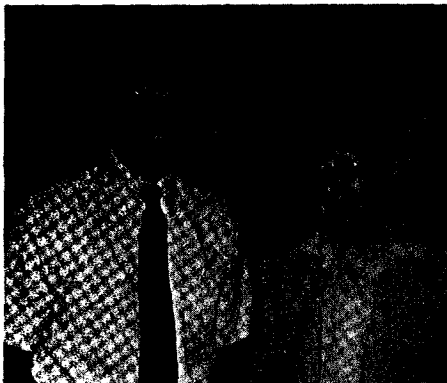
meeting of pro-civil defense senators and offered to take the initiative in bringing about such a meeting. Hatch also wanted to pursue the matter further and was intrigued by Dr. Wigner's effort. Anti-MAD Schweiker observed: "Civil defense must gain credibility."

Where senators were not available Wigner talked with aides. At the offices of Senator Donald Riegle (R-MI) and Senator Richard Lugar (R-IN) he found aides enthusiastically in support of civil defense. At the offices of Senator Larry Pressler (R-SD) and Senator John C. Stennis (D-MS) the receptions were "disappointing."



Wigner with Senator Edward Zorinsky

Presidential candidate, Congressman Philip Crane (R-IL), indicating an interest in TACDA, observed: "If our leaders fail to inform the people of the danger, the situation gets more perilous. It's appalling that no adequate provisions have been made in the event of nuclear blackmail."



Congressman Don Mitchell and Wigner

Congressman Donald Mitchell (R-NY) whose tireless attempts to bolster the sagging national civil defense program have built up new interest (but not enough) sees a requirement for media involvement. "What is needed," said Mitchell, "is people with authority and understanding to publicly speak up. We've got to get national TV personalities to say we've got a problem."

Perhaps, as Congressman Mitchell so clearly indicated, we ought now to "play the media card"—at a time when the media are actually recognizing the problem.

One factor that is helping, and will help more, to bring about a media awakening is the snowballing attention of Congress to the requirement for civil defense action. (See last half of Capitol Commentary, page 3.)

In this "CD offensive" the continued Wigner-Bergman initiative is playing a significant role. Crucial also are continued contacts by USCDC, NASDPD,

Your congressmen in Washington want to know what you think! Your opinion of civil defense requirements is important. Let it be known. In doing so you will be helping to promote a virile CD program.

Make your letter simple, short, to-the-point, clear and original. Address your letters:

Senators:

The Honorable John S. Doe
Senate Office Building
Washington, D.C. 20510
(Dear Senator Doe)

Representatives:

The Honorable James K. Roe
House Office Building
Washington, D.C. 20515
(Dear Mr. Roe)

Specific building and room numbers may be used, but are not required.

ASDA, RDOA* and other groups and individuals.

Most important is the magical constituent-congressman relationship. A conviction by the individual that his contacts—his *repeated* contacts—do count can turn the trick. For the man on Capitol Hill the bottom line is what the people who elect him think: his constituents. □

*USCDC: United States Civil Defense Council
NASDPD: National Association of Disaster Preparedness Directors
ASDA: American Strategic Defense Association
RDOA: Radiological Defense Officers Association

LENIN AND THE "SUICIDE" OF THE WEST

"The so-called cultured elements of Western Europe and America are incapable of comprehending the present state of affairs and the actual balance of forces; these elements must be regarded as deaf-mutes and treated accordingly.

"A revolution never develops along a direct line, by continuous expansion, but forms a chain of outbursts and withdrawals, attacks and lulls, during which the revolutionary forces gain strength in preparation for their final victory.

"It is necessary to resort to special maneuvers capable of accelerating our victory over capitalist countries. We must:

"(A) In order to placate the deaf-mutes, proclaim the (fictional) separation of our government and governmental institutions (the Council of Peoples Commissars, etc.) from the Party and Politburo and, in particular, from the Comintern, declaring these latter agencies to be independent political groups which are tolerated on the territory of the Soviet Socialist Republics. The deaf-mutes will believe it.

"(B) Express a desire for the immediate resumption of diplomatic relations with capitalist countries on the

basis of complete non-interference in their internal affairs. Again, the deaf-mutes will believe it. They will even be delighted and will fling wide open their doors, through which emissaries of the Comintern and Party intelligence agencies will quickly infiltrate into these countries disguised as our diplomatic, cultural and trade representatives.

"Speaking the truth is a petty bourgeois prejudice. A lie, on the other hand, is often justified by the end. Capitalists the world over and their governments will, in their desire to win the Soviet market, shut their eyes to the above-mentioned activities and will thus be turned into deaf-mutes.

"They will furnish credits, which will serve us as a means of supporting the Communist parties in their countries, and by supplying us with materials and techniques which are not available to us, will rebuild our war industry which is essential for our future attacks on our suppliers.

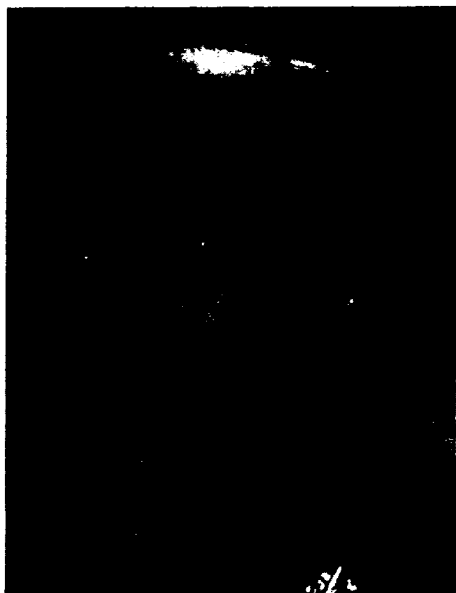
"In other words, they will be laboring to prepare their own suicide."

—Lenin as quoted in the *Daily News Digest* (Phoenix, AZ)

According to Dutch authority Colonel L. C. Schreuders, the so-called "neutron bomb" is not a new horror weapon as Soviet propaganda would like us to believe. It is a weapon of DEFENSE that will effectively DEFEND European invasion routes while saving defender lives and property. (It is indeed "horrible" to those who may aim to break through NATO defenses without being seriously hampered.) Colonel Schreuders makes a convincing case for N-weapons bolstered with compelling statistics.

FACTS AND FICTION SURROUNDING THE NEUTRON WEAPON

Colonel L. C. Schreuders



Dutch Colonel L. C. Schreuders' military service includes:

- a. the Dutch Resistance, 1943-45
- b. the Dutch-Indonesian War, 1947-50
- c. the Korean War (with the Dutch Battalion attached to the 2nd U.S. Infantry Division), 1950-51

Colonel Schreuders was in command of the Royal Netherlands Military School, 1975-78. He is now attached to the National Defense College in The Hague.

Seldom has the public opinion in the Netherlands been so stirred up as is the case today when heated discussions are carried on as to whether or not the neutron weapon should be produced (and made use of, if necessary).

Seldom, too, have elements of the Dutch people, who normally pride to judge things in sober reason, allowed themselves to be carried away in such emotional approach of this subject, so that a detached, let alone a sound discussion is hardly possible.

If, however, a well-considered choice is to be made one should base one's views on facts and not on fiction. The author of this article found that this knowledge of facts is considered undesired in certain circles when his offer to give a lecture on the subject was dismissed with the remark "No, because then we are not objective anymore."

In the first place it is fiction to pretend that by the introduction of the neutron weapon it would be the first time a weapon "to kill people by way of radiation" was introduced. Both the Warsaw Pact and NATO have in their possession for dozens of years already "weapons to kill people by radiation" being the tactical atomic weapons positioned on either side of the border between East and West.

It is also fiction to believe that a possible introduction of the neutron weapon would only now involve the danger of a conventional conflict turning into a nuclear weapons conflict.

Fact is that the NATO concept is also based on the strategy of the "flexible response" (or should we say the "uncertain answer"?).

In this strategy the possible use of nuclear weapons plays a decisive role.

It is also a fact that this concept, in which NATO has announced its intention to make use of nuclear weapons only in extreme cases, has been endorsed not only by this but also by preceding Dutch governments.

In view of the present point of view "to make use of nuclear weapons IF NECESSARY" the actual choice at the moment is *not* so much "conventional weapon or neutron weapon" but rather "today's nuclear weapons (A-weapon) or neutron weapons (N-weapon)."

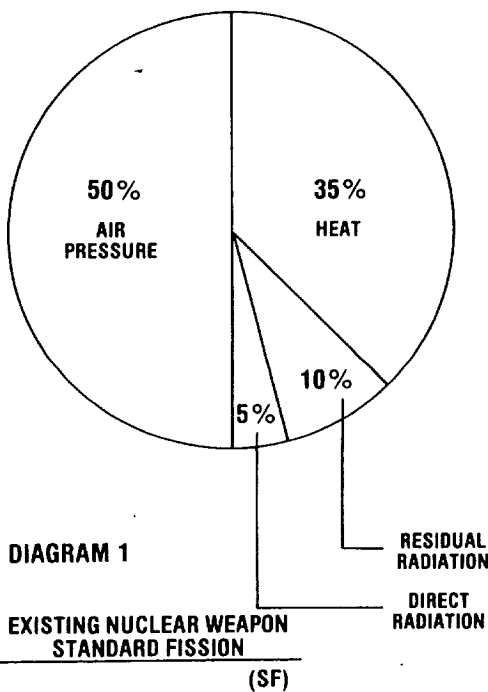
To be able to make a choice it is essential in the first place to compare the effects of the present A-weapon to those of the N-weapon.

Existing Nuclear Weapon Standard Fission (SF)—

Heat, air pressure and residual radiation, the latter mainly in the form of the ill-famed "fallout" have little effect on armored vehicles due to their compact construction and their armor.

It is only the 5% direct radiation penetrating through the armor plating that would be effective in eliminating the tank crew.

Near ground zero the effect of this radiation is limited compared to the side effects. The undesired side ef-



fects, i.e. heat, air pressure and fallout, penetrate far outside the radiation area, causing casualties among the civilian population and damage to buildings.

The facts:

- when making use of an A-weapon the crew of armored vehicles is put out of action as a result of radiation;
- the undesired side effects of heat, air pressure and fallout can cause casualties among the civilian population and damage buildings.

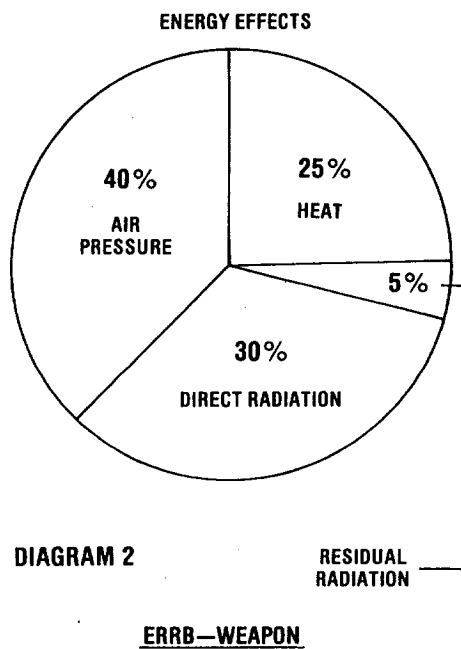
The Neutron Weapon (N-Weapon)

The official name—Enhanced Radiation Reduced Blast (ERRB-Weapon) already indicates that a different distribution of power is made, i.e. more radiation and less air pressure (blast) among other things.

Diagram 2 clearly shows that direct radiation is six times stronger than that of the A-weapon while the side effects are considerably less. They are even so slight that they fall within the radiation area thus greatly reducing losses and damage from air pressure and heat outside this area of radiation. The chances of residual radiation are also considerably reduced.

The facts:

- the crew of the armored vehicles is also put out of action due to radiation when the N-weapon is used;
- undesired side effects "heat, air pressure and fallout" are avoided so losses or damage are



not caused outside the radiation area.

Comparison

As it is not the intention, when using a tactical nuclear weapon, to put out of action just *one* tank but a tank *formation* it will be essential, in view of the limited radiation effect of the lethal initial radiation, to use an A-weapon of rather high KT-value (explosive power) if the desired effect is to be reached.

If an N-weapon with its much more powerful radiation is used a much smaller KT-value will suffice.

An "example from practice" speaks for itself:

Following the outbreak of a conflict the NATO Armed Forces are unable after a few days to prevent a further penetration of the attacker with the aid of conventional means.

In order to avoid a total collapse of Western defense NATO is forced to release the use of tactical nuclear weapons. The Division Commander now has available certain nuclear weapons—both A-weapons and N-weapons.

Suppose the Dutch town of Zeedorp has already been captured and it is decided to make use of a nuclear weapon on the attacking armored formation as a breakthrough threatens to take place near Nieuwstad.

It will be essential to make use of a 10KT A-weapon to be able to bring to a halt this formation advancing in a strip of 1.5 kilometers \times 1.5 kilometers. The formation can consist of either about 30 tanks or 30 armored personnel vehicles with 12 tanks (Diagram 3).

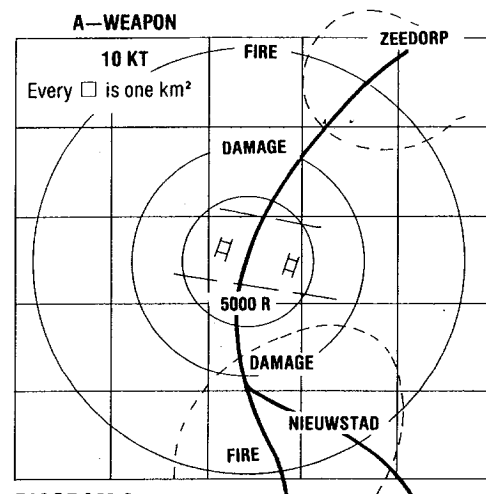


DIAGRAM 3

Effects:

—the radiation of this weapon will put out of action the crew of the armored vehicles to a radius of about 0.7 km.

—the air pressure (blast) will also cause destruction in a radius of 1.3 km., i.e. heavy damage and casualties in Nieuwstad.

—the heat can cause fire and burns in a radius of 2.3 km., i.e. fires in both Zeedorp and Nieuwstad.

—there is every chance of fallout.

If, on the contrary, a *neutron weapon* is used one can suffice with a 1 KT neutron weapon (Diagram 4).

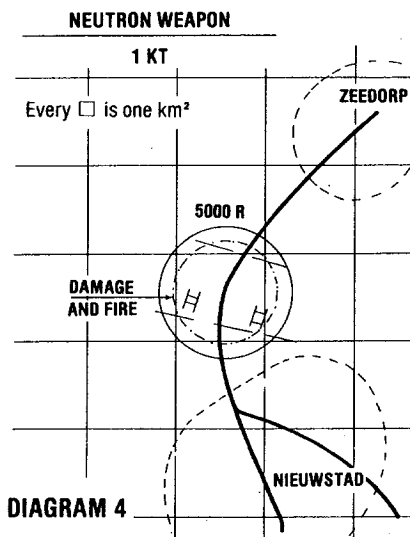


DIAGRAM 4

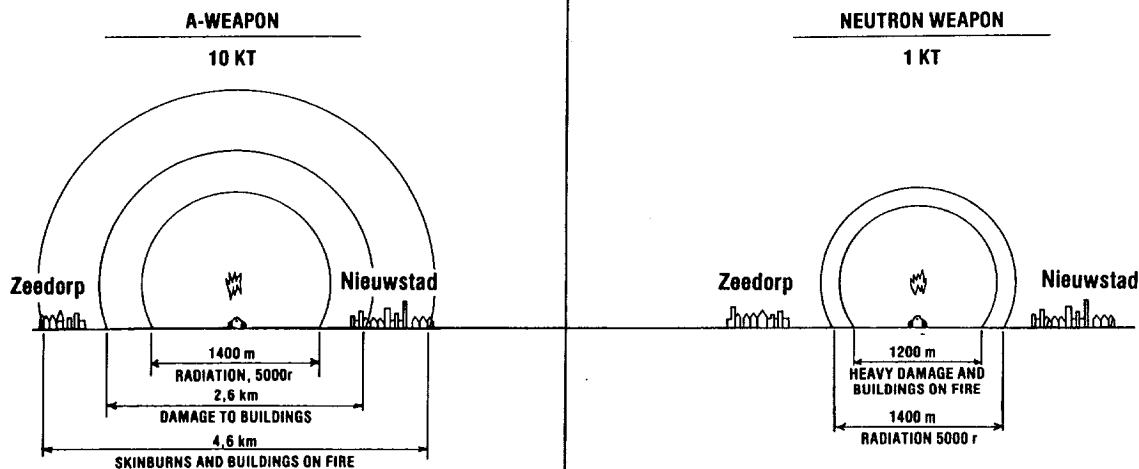
Effects:

—also in this case the radiation will put out of action the crews of the armored vehicles to a radius of about 0.7 km.

—air pressure and heat will not cause any losses or destruction outside this area, neither in Zeedorp nor in Nieuwstad

—the chances of fallout are extremely slight

DIAGRAM 5



Conclusion:

—TO THE ENEMY TANK CREWS IT DOES NOT MAKE ANY DIFFERENCE WHETHER THEY ARE PUT OUT OF ACTION AS A RESULT OF RADIATION OF A 10 KT A-WEAPON OR BY THAT OF A 1 KT N-WEAPON;

—IF A NUCLEAR WEAPON IS USED THE CIVILIAN POPULATION IS BETTER OFF BY THE USE OF A 1 KT N-WEAPON THAN BY THE USE OF A 10 KT A-WEAPON

Diagram 5 once again indicates this difference schematically.

Views of those in favor and those against N-weapons

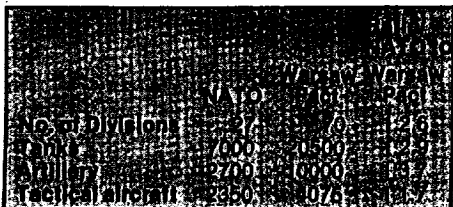
Those in favor

In the first place those in favor, including a great many military men, point out the necessity of having available nuclear weapons in general and especially the necessity of having neutron weapons.

A war can be prevented by convincing the opponent that an attack will not produce any result or will mean unacceptable losses to the opponent.

As NATO's objective is clearly aimed at defense, military personnel do not ask for more materiel compared to their opponents. But they do ask for adequate means to be able to carry out their defensive task successfully. To this end a proportionate 1:1 ratio is not even essential.

A proportionate 1:1 1/2 ratio and even 1:2 may still be acceptable. However, it is true that in the past few years the originally existing proportion of 1:2 is shifting ever further in the unfavorable sense of the word, as is shown in the below survey of the



Central Sector in Europe (source: International Institute for Strategic Studies 1977/1978):

These numbers are causing even more anxiety because the originally existing qualitative lead of the West is beginning to wane ever faster. In this way we mention the Russian T-72 tank, appearing in ever larger numbers, which is one of the best tanks in the world, while also the Warsaw Pact artillery is easily comparable to that of the West.

The possibility to stop an attack with conventional means is ever getting less in view of the balance of power extremely unfavorable to the West.

For lack of sufficient conventional means one will have to resort to the use of nuclear weapons to prevent at any rate the occupation of Western Europe.

The question is now: A-weapons or neutron weapons?

The actual use of A-weapons is becoming more precarious in the ever-thicker populated and highly industrialized Europe which, in view of its pattern of life, is becoming ever more vulnerable, whereby the cutting off of energy (electricity, gas) water works, public services, etc. may lead to a catastrophe. The decision to proceed to the use of such weapons (A-weapons) is getting more and more difficult for both the President of the United States and for NATO. When already at this time within NATO they are doubting the possibility of the use of this type of nuclear weapons, then most certainly also Moscow may become convinced that NATO will shrink from the use of these weapons in the event of a possible conflict.

The nuclear weapon will then have lost its credibility and with that its main objective: its deterring power.

The neutron weapon on the other hand, which can be thrown into action without causing serious losses among

the population and without causing serious damage to buildings and installations, makes an actual use possible.

Inasmuch as Moscow also recognizes this (hence Brezhnev's fierce reaction) the N-weapon's credibility—and with that its deterring power—increases.

Therefore, both *main arguments of those in favor* of N-weapons include:

—lacking adequate conventional means we can be forced to make use of nuclear weapons; if that would be the case an N-weapon should be preferred to an A-weapon;

—the N-weapon would be used on NATO territory *only* (to repulse invasion) and *not* on aggressor territory where its use would be of questionable value. (*It is exclusively a weapon of DEFENSE.*)

—the A-weapon is going to lose its deterring power; the N-weapon restores this deterring capacity.

The opponents

The opponents have many points in common even though they originate from different groups:

—they persistently (for political/psychological reasons?) speak of a "neutron bomb" while it is artillery ammunition fired by a gun or by the Lance missile;

—they never compare the effects of the present A-weapon to those of the N-weapon;

—they create the impression that radiation is an invention of the present moment;

—in their calculations, if they make any, they mostly assume that an N-weapon is fired at cities for which the weapon is not meant at all;

—they do not go into the consequences of the rejection of the nuclear weapon in general and the N-weapon in particular.

The campaign against the N-weapon was started in the Netherlands in August 1977 by the Communist Party Netherlands (CPN). With this they managed to achieve success which they themselves probably could not have dreamed of.

With the slogan "Stop the Neutron Bomb" they managed to get the support of not only the two small pacifist parties but also of "peace groups" from the various religious denominations and parties. One should have admiration for the expert way in which CPN managed to give form and guidance to these movements and managed to put a stop to the various shades of opinion. It is remarkable that none of the religious or other "peace movements," for instance, have wanted to draw attention to the introduction of the mobile SS-20 missile by the Soviet Union, a medium range missile with which the entire Western Europe can be covered.

The question of why the West needs this N-weapon (as a result of the ever-increasing Warsaw Pact armament, among other things) was not asked either.

At the forum in Amsterdam in March 1978, attended by the Vice Chairman of the Supreme Soviet of White Russia, among other persons, the Russian delegation was loud in praise of the opponents of the neutron weapon.

It was added that the West need not count on any concession from the Soviet Russian side when abandoning the introduction of the neutron weapon.

What are the main motives of the various groups?

Certain groups among the *Communists*, especially the groups following the "Moscow line," do not in fact object so much to the presence of nuclear weapons, not even N-weapons, provided they are kept by the Soviet Union.

They comply with the instructions given by Stalin in 1928 to Communist parties outside Soviet Russia, i.e. it is their duty to support the proletariat of the Soviet Union in her battle against enemies both inside and outside the Soviet Union. Lenin indicated in 1920 already in what way this was to happen. Lenin left instructions that every attempt should be made to try and make use of every contrast existing between groups and countries.

The fact that Moscow is concerned about the possible introduction of the N-weapon emerges from the fierce "harangues" made by Brezhnev and from the praising words expressed by the Soviet delegation referred to.

The West shall have to make a choice in view of the balance of conventional power becoming more and more unfavorable and the East Bloc

making up the qualitative backlog. That choice narrows down to:

a. a political capitulation carried out under pressure of the military power of the Warsaw Pact, supported by national groups followed or not followed by occupation;

b. a military capitulation after the outbreak of hostilities as a result of the lack of adequate conventional means;

c. increasing conventional armament to such a level that an attack can be beaten off successfully. (However, it costs more money, and which government would take that risk?)

d. compensating for the shortage of conventional means by making use of N-weapons in case of absolute necessity.

The introduction of the neutron weapon will yet have to be made if the Soviet Union continues to increase its conventional armament and if the West does not wish to make the financial sacrifice to raise the level to such an extent ensuring successful defense.

If neither one thing nor the other is wished for we will only be able in the not far-distant future to choose between capitulation either before or after the outbreak of a conflict.

After that there will be little left to choose from. □

WHAT CIVIL DEFENSE SCHOLARS ARE SAYING (Excerpts from FEMA Staff College Phase IV Position Papers)

After approximately twenty-eight years of Civil Defense efforts wherein the Federal Government supplied advice, but initiative was left to the people, accomplishment is negligible. Probably part of the fault lies in the fact that many U.S. citizens are under the misapprehension that their safety is being provided for.

The first problem faced in implementing Crisis Relocation in the local jurisdiction is to establish a workable Civil Defense Program. We as a Nation must face the fact that a Civil Defense program is not an instigator of war but our only means of survival during a nuclear attack. With this fact in mind the initiative and responsibility for the program must then be taken by the Federal Government.

—Robert L. McWilliams
Colorado Springs, CO

In a grand and rewarding society in which seemingly our cup runneth over with a bountiful supply of the good things in life, is there really a pressing need for something called civil defense?

After all, there seems to be an endless supply of food, automobiles, clothing and, until recently, gasoline. In this era of apparent plenty and pleasure, why all the furor over something as seemingly inconsequential and unsolicited as civil defense?

Indeed, the Russians would like us to believe that they also are wondering why we need concern ourselves with an antiquated public function such as civil defense.

And what do we believe? Sometimes, and altogether too often, many of us believe what the Russians want us to believe. That it is possible to co-exist in peace with the communist world. But, of course, this meaning is concealed behind the fact that peace to the communists means peace under their totalitarian conditions. Other peace-loving countries have gone along with this approach and have survived to regret it.

—Dana J. Cessna
Denton, TX

BOOK REVIEWS

AIRPORT/COMMUNITY EMERGENCY PLANNING

(NFPA 424)

1978 Edition (Distributed in 1979)

Published by NFPA (National Fire Protection Association)

Developed by The Subcommittee on NFPA 424—Chairman: John X. Stefanki, United Air Lines

Prepared by the Technical Committee on Aircraft Rescue and Fire Fighting
60 pages. May be obtained from NFPA, 470 Atlantic Ave., Boston, MA 02210. Cost \$2.00.

Reviewed by Walter Murney

With the admirable safety record of commercial aircraft (33 times safer than automobile travel) you might well wonder why all the fuss about air safety. The pressure is now on for airports to hold a disaster exercise at least once a year. Airport and airline safety personnel mean business and are striving doggedly to make an excellent safety record even better. It's worth the fuss.

High among the factors influencing depressed casualty rates are prompt professional rescue services. In the event of accident, following an aircraft accident, observes NFPA 424, many lives may be lost and many injuries intensified if immediate medical attention is not provided by trained rescue personnel.

Exercises held at least annually are an absolute "must" according to NFPA 424 and give a well-designed emergency plan muscle and credibility. "An emergency plan that has not been tested is no plan at all and as such is useless. Each emergency exercise should be a coordinated program between the airport and the community."

The manual gives an outline chronology for exercise planning and recommends as an effective tool in the all-important triage function a color-coded, simple triage tag using symbols. METTAG (manufactured and sold by the *Journal of Civil Defense*) is displayed front and back as an example.

Captain John X. Stefanki is one of the "fathers" of NFPA 424. An active pilot with United Air Lines, Stefanki is also chairman of the Airport Disaster Planning Subcommittee of the Air Line Pilots Association.

"Even though we work diligently to avoid it," says Stefanki, "every airport can expect sooner or later to be involved in some type of emergency accident operation. When that time comes crash survival possibilities will depend heavily on the existence of a good airport emergency plan coordinated with a viable community mutual aid plan, annual training within

the framework of such a mutual aid plan, the annual conscientious exercise of the plan, and on functional critiques working toward emergency action improvement.

"Unnecessarily high casualties are the result of inattention to accident risks, while the saving of the lives of the people involved who otherwise might not survive is the inspiring reward where good planning, training and realistic exercises are practiced. Fortunately, more and more progressive airports throughout the world are coming to realize this."

The Stefanki philosophy applied to civil defense could also be parlayed into widespread lifesaving payoffs. As a matter of fact NFPA 424 should be on (and off) the shelves of every alert civil defense director. Its applicability extends far beyond the airport.

The Non-Problem of Nuclear Wastes, by Petr Beckmann. Published by The Golem Press, Box 1342, Boulder, CO 80501. 16pp. \$2. Available from The Golem Press.

Reviewed by Kevin Kilpatrick

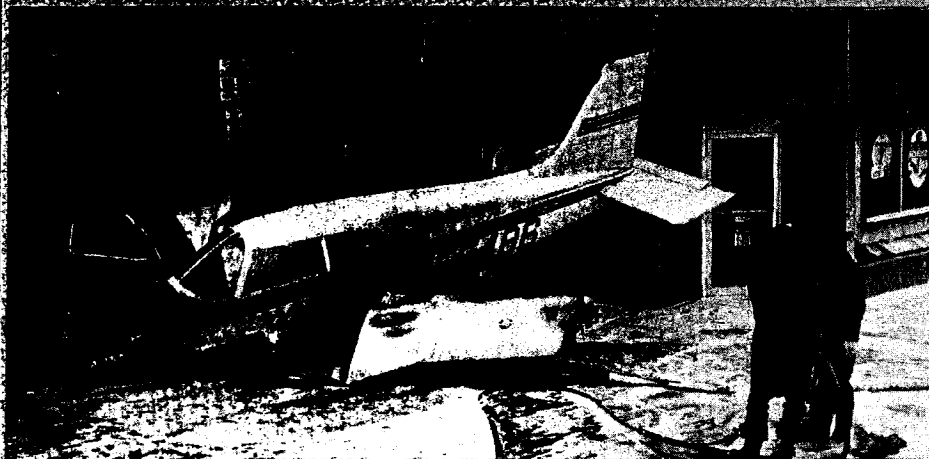
The "lynch campaign against nuclear power," according to nuclear proponent Petr Beckmann distorts fact as expertly in addressing the nuclear waste question as in bewailing the reactor radiation bugaboo.

For, if the truth were known, there is no nuclear waste problem. At the bottom line there is actually a "non-problem" in that proper nuclear waste disposal (a well-known and practiced technique) "can eliminate part of the problem."

"The problem" being wastes from fossil fired plants that are 3.5 million times greater in volume and in toxicity duration than wastes from nuclear plants.

Instead of being buried they are partly showered upon the countryside and cityside—radioactivity and all—and partly disposed of by indiscriminate dumping.

Almost 50,000 deaths a year are the result of air pollution caused by coal-fired power plants (this does not in-



When Charles Strauch's rented plane lost power on his final approach to Midway Airport in Chicago he landed on Chicago's West 63rd Street. Strauch jumped from the burning plane as it came to rest against the above car (the second one hit). The Chicago Midway Fire Department was on the scene in 90 seconds. The fire was out one minute later. Miraculously no one was killed or injured.

MACY: FEMA TO BE "PATRIOTIC"

Obviously no cobwebs grace Director John Macy's new FEMA shop. Specifying a firm FEMA role as a "supporting partner" with state and local disaster mitigation agencies, Macy calls FEMA "the one focal point within the Federal Government for all disaster planning response and recovery activities."

In his August regional briefings Macy had much to say, including:

"Those of you who have been involved in that program [the current CD program] honorably and effectively through the years may have some concern that because of the broad scope that I've described we're going to turn our back on the importance of preparing the country to deal with a hostile attack. Let me assure you that that is not the case, that in talking about 'multipurpose' it doesn't mean that we're obscuring what was once the primary purpose. I like to feel that we're *reinforcing* that primary purpose by expanding the capacity to deal with emergency...."

"There will be a FEMA effort to try to resolve long-standing issues as quickly as possible. I think it's been very unfortunate that for years there has not been a civil defense policy. I don't know how you've been able to develop a budget for civil defense without a policy—and with Congress's increasing impatience with the absence of any kind of plan from any of the last six Administrations with respect to civil defense. I intend to get an answer."

"I have believed that delay is the ultimate denial. And it seems to me that if we're going to say that the program is not to continue it should be a very conscious decision. I don't believe the American people want it discontinued. Maybe a small group that feels that the perpetuation of self-protection is in some way an affront, but I don't think it is. I think we have an obligation to develop a program which is realistic and that will provide the degree of protection to the American people so that we *don't assume* that there is going to be a massive elimination of population in virtually a Jonestown kind of atmosphere."

"I realize it's not very fashionable these days to be patriotic, but I think our agency has to be. I think we have to believe in the importance of this country, believe in its values and believe in taking every reasonable step."

"We're not in the business to make people happy. We're in the business to make sure that we reduce risks."

clude other coal-related deaths due to black lung, transportation, etc.)

The Three Mile Island reactor failure says Beckmann, is now causing 50 deaths per year—not due to anything emanating from the disabled reactor but due to the tons of pollutants showered on the populace by its replacement coal plant.

Not that Petr Beckmann is fighting coal. He's not. We need it. The risk is worth it. It's just that nuclear and fossil fuels must be placed in proper perspective to show that nuclear power is safer, cleaner and, if untempered by the alarmists, cheaper.

Ultimately the acceptance of nuclear power will be dictated by supplies of nuclear and conventional fuels, the latter being squeezed out.

The dramatics of the "lynch campaign" can't stop that—only delay it.

Disaster Survival Handbook

By Alton L. Hygerson

Published by Brigham Young University Press, 236 pages, \$7.95

Reviewed by Lt. Col. Richard R. Holt

This text is not exactly a "How to" book in the usual sense of the word. It is a book that tells you how to survive. The theme is that when disasters occur, whether natural or man-made, the individual is self-reliant. The book addresses itself to (1) the nature of disasters, (2) describes what to do before, during, and after each, (3) details the techniques of short- and long-term survival. The reader is, of course, given to the individual with not only the will to survive but also skill and wise preparation.

A chronology of disasters is presented from the pre-disaster phase (advance preparation and early recognition of the threat), impact phase (what to do when the disaster strikes) and post-disaster phase (includes recovery from the disaster).

Natural disasters are covered in the beginning chapters as to causes, results and historical background. Those covered are:

River Floods	Landslides
Flash Floods	Winter Storms
Tornadoes	Avalanches
Hurricanes	Lightning
Forest Fires	Heatwaves
Earthquakes	Volcanoes
Tsunamis	Fire

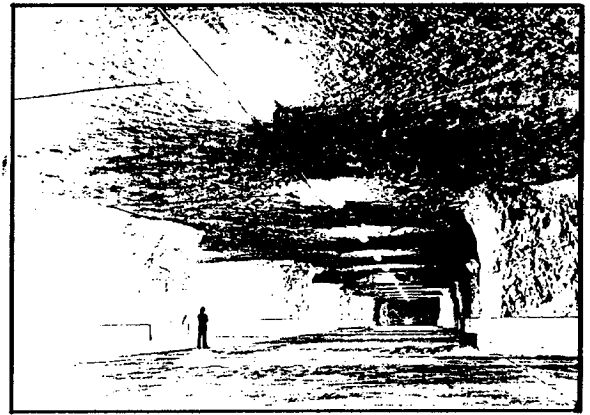
Nuclear attack is presented in terms of being a real possibility without going into mind-wrinding emotions. The statement is given that our enemies can deliver nuclear warheads accurately on targets up to 8,000 miles away.

The dangers of the effects of light, heat, blast, and gamma radiation are discussed in matter-of-fact terminology.

Final chapters are concerned with individual survival techniques such as finding and storing water, obtaining heat and light, obtaining food, basic weather forecasting, signaling, choice of survival weapons and first aid and emergency care.

The author is a professor of health science specializing in safety education and emergency care at Brigham Young University. The book is helpful and slanted to the individual or individual family.

Limestone mines near Kansas City, Missouri, are considered for their suitability as shelters for the metropolitan population. The number of people in each mine should be kept sufficiently low so that the mine does not become an attractive direct target. These mines could become excellent fallout shelters and shelters against blast from detonations on nearby targets but could not survive direct hits. Some effort and money will be necessary to make them habitable for a large number of people.



(Photo: TACDA Technical Report No. 2)

KANSAS CITY'S UNDERGROUND: HOW GOOD? FOR HOW MANY?

Carsten M. Haaland
Oak Ridge National Laboratory

Research sponsored by Defense Civil Preparedness Agency under Interagency Agreement 40-680-78 under Union Carbide Corporation contract W-7405-eng-26 with the U.S. Department of Energy.



Carsten M. Haaland

In March 1979, I had the interesting experience of being shown through a part of Subterropolis* in Kansas City, Missouri. This particular limestone mine is only one of 14 vast underground facilities which are developed to the extent that only a little more effort would make them suitable as shelters for the population in the area (Ward, 1979). Sixteen additional mines exist in the area but are considered unsuitable for use as public shelters because of the way they were mined.

Subterropolis consists of a 15 million-sq.-ft. cavern with ceiling heights of about 12-13 feet, mined by the room and pillar method. About a million square feet are added each year by mining. Allowing 10 sq. ft. per person (Defense Civil Preparedness Agency's number for the square footage required per person in a well-ventilated shelter), this one mine alone, if well-ventilated, would have room for all 1.3 million people in the Kansas City area, with a couple of million square feet to spare!

*Subterropolis is a registered trademark.

**"The primary productive
factor of all humanity is
... the worker ... if he
survives ..."**

However, there are several reasons why such usage would not be advisable. First of all, that many people crowded together in such a small area might become a tempting target, and even the thick layer of rock overhead wouldn't prevent a one-megaton (MT) surface burst from breaking through and killing all of the occupants. Secondly, getting over a million people into any one enclosure is an unheard-of feat. It's bad enough to get a hundred thousand people in and out of a large stadium with all its entrances and exits. Additional reasons are hardly necessary, but just consider the problems of food, water, sanitation, and social control for such a large multitude of people confined in a single underground facility!

Some people may argue that nobody's going to bomb a target of just civilians, with no factories or military capability, and therefore, the first reason above is invalid. I wouldn't want to count on that logic in an all-out nuclear war. There is a quote from Lenin which pervades Soviet literature on civil defense and military affairs:

The primary productive factor of all humanity is the laboring man, the worker. If he survives, we can save everything and restore everything . . . but we shall perish if we are not able to save him.

"With a little planning and money . . ."

That philosophy could be turned around to read that their enemy will perish only if the enemy's laboring man, the worker, does not survive. Bombing of civilians from aircraft started on Guernica in the Spanish Civil War and became widespread in World War II. Women, children, and animals were often slaughtered by conquering armies according to Old Testament and classic histories. In preparing for defense in a possible war, it is prudent to assume that the potential enemy will not be guided by humanitarianism.

With these considerations in mind, let's discuss how the Kansas City population might be dispersed to reduce the targeting possibility. If all fourteen partially developed mines in the Kansas City area were used, the population in each would be reduced to about 93,000 people, if all 1.3 million people in the area decided to get into them. Actually it is probably more realistic to assume that about 20% of the population will not move to shelters; this assumption is usually made for evacuation planning. With this assumption, the population per mine would be about 74,400, like Joliet, Illinois, ranked 250th in population among U.S. cities. That's still a lot of people, both in terms of being targeted and getting people in and out.

In the 1980's the Soviets, as a result of their continuing deployment of MIRVs, may have between 7,500 and 10,000 deliverable warheads on ICBMs. With that many warheads, a city like Joliet, or maybe any clump of 74,000 people, could be anywhere from the 3000th to the 5000th target down the list, depending on targeting doctrine.

Reducing the population per shelter to 50,000 brings it to the size of about the 400th ranked city in the U.S., like

Passaic, New Jersey, or Sheboygan, Wisconsin. To get down to the 500th ranked city in equivalent population, the shelter population would have to be reduced to 40,000 and to the 1000th ranked city, to about 25,000.

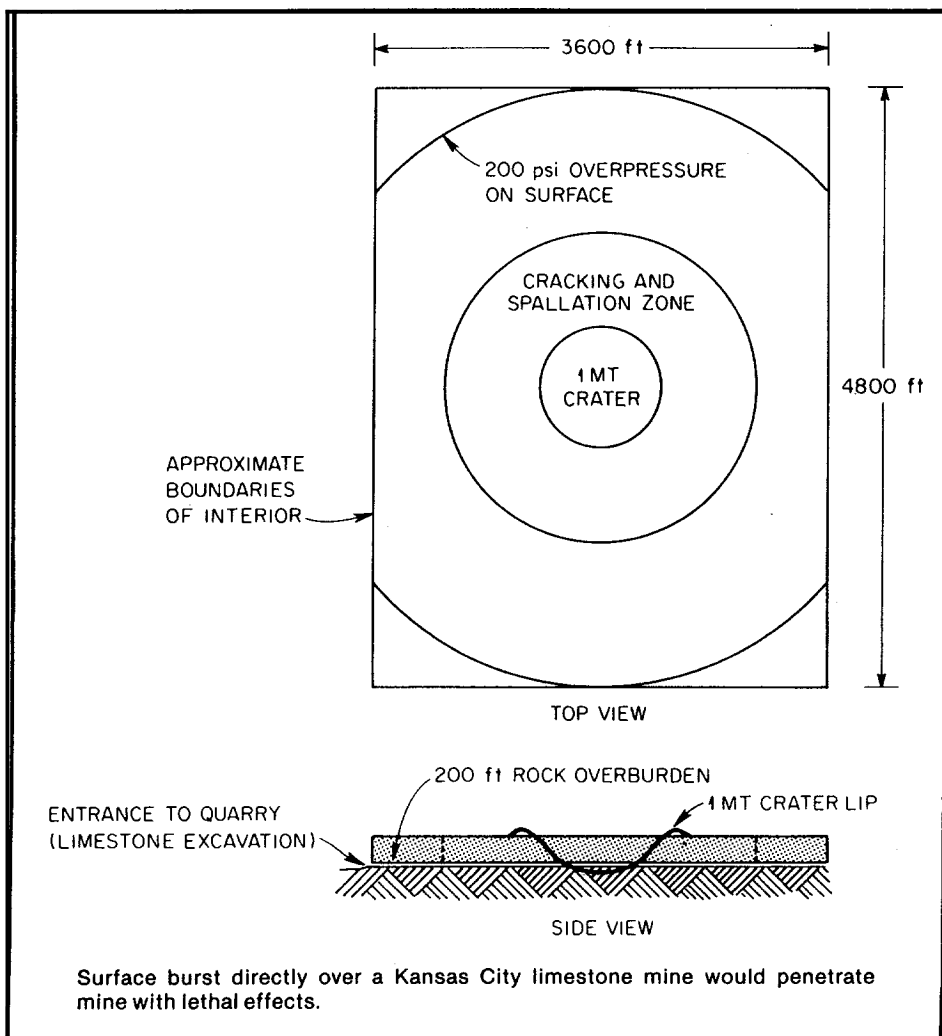
If 25,000 were chosen as the largest occupancy for any Kansas City shelter, there would have to be over 40 shelters of such size to contain 80% of the 1.3 million population. This number of large mine shelters exceeds the number available around Kansas City, even including 16 mines which, because of the way in which they were mined, are considered unsuitable for use as public shelters. If all 30 mine facilities were somehow made suitable for shelters, the occupancy in each would be about 35,000, comparing with the population of about the 625th ranked U.S. city, like Beverly Hills, California, or Hackensack, New Jersey.

The attractiveness of large shelters as targets may lead Kansas Citians to decide to consider other facilities in addition to the mines as potential shelters for their population. In any case, it's obvious that some kind of plan would need to be worked out to let

people know where they should go for shelter, so that the population could be uniformly distributed and there wouldn't be pileups of people at some shelter locations.

Now let's consider what needs to be done to the limestone mines to make them habitable as shelters. As I see it, they need, as a *bare minimum*, ventilation, lighting, drinking water, and sanitation, all of which should be able to operate independently of external electric power or water systems. Because people would also want to know their location and where to walk to get out of these multi-acre underground labyrinths, I would recommend that the pillars be labelled with some kind of logical identification scheme (e.g., alphabetically north-south and numerically east-west) and that maps be provided or displayed on the pillars.

With a little planning and money, the caves could be provided with emergency (expedient) kitchens and first aid facilities. A structure for shelter management should be set up for controlling movement of people and supplies, handling emergencies, and dealing with the various social and welfare



Comments by Dr. Denis Ward, author of *Emergency Preparedness and the Kansas City Underground* (TACDA Technical Report No. 2—July 1979):

Professor Haaland indicates in two places in his article that the 16 additional mines (i.e. over and above the 14 developed mines) are considered unsuitable because of the way they are mined. In reality, perhaps half could never be used due to (1) improper mining methods where too much limestone was removed from pillars and/or roofs; or (2) water in the mine; or (3) actual collapse. The other half could be used, but with the cost involved and good space available in other mines it probably would not be deemed feasible.

I agree that a large number of individuals would not want to use the shelters. I also concur that we would want to optimize dispersal. When one considers that it is approximately a 60 mile axis from the extreme northwest mine at Atchison to the extreme southeast Kansas City mine, and approximately 40 miles on a southwest-northeast axis, the target area would be extremely large. I agree that it would be folly to try to put over one million people in the Great Midwest complex. *But*, we need to be positive and plan to protect as many as possible, even though we may have to begin with plans for a few thousand in each available mine and progress from there as an influx of money and needed supplies allows.

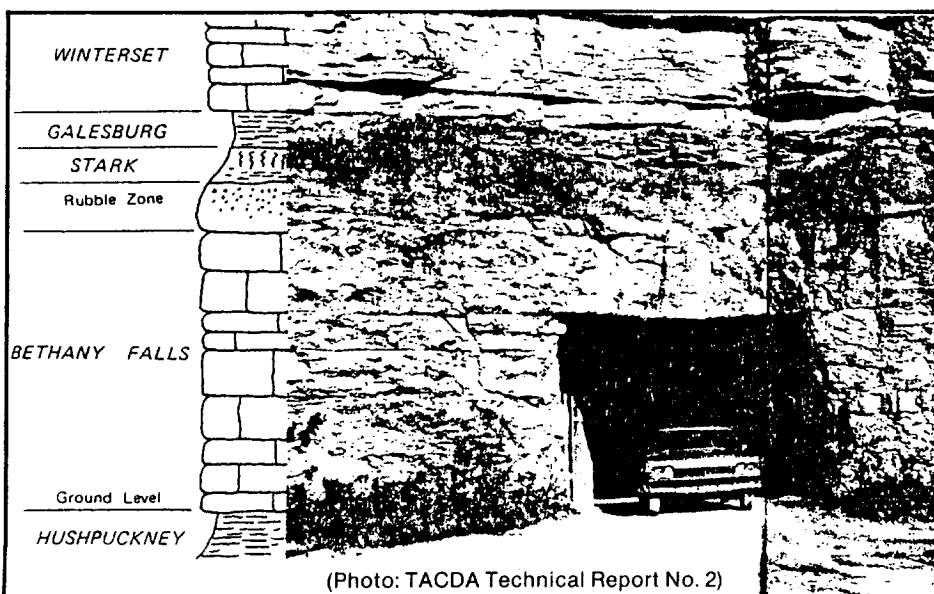
problems which will arise. A dispensary or dispensaries and an emergency hospital with doctors and nurses would be essential in these shelters containing many thousands of people. Of course, there must also be radiation detection instruments available, with competent people to operate them. Radiation monitors will check radiation levels at the entrances, prevent tracking of fallout into the mine, and determine when and how long people can go outside on various missions.

Communications within the mines could be handled by CB radios (it's been tried) or walkie-talkie radios. Communications with the outside world could be accomplished by telephone lines, with a backup of two-way radios attached to exterior antennas. A public address system inside the mine would be useful for control, announcements, information and entertainment. Some people may bring in portable radios, but they won't pick up any signals unless antenna wires are run to the outside. Radios may be useful to supplement the public address system and boost morale. Information should be given to radio users regarding the effect of the electromagnetic pulse (EMP) from nuclear detonations on radios and how to cope with it (Barnes, 1974).

I think it would be desirable to inform and instruct the public to prepare for the possibility of failure of the lighting and ventilation system. Imagine being in the middle of 25,000 people jam-packed into the farthest reaches of a mine in absolutely pitch-black darkness with the air hanging heavy with humidity and increasing carbon dioxide. Even though the mines

may have plenty of space to spare if the occupation is limited to 25,000 or so (to prevent becoming an attractive target), the occupants should move far away from the entrances to decrease blast and radiation effects. Some people may bring flashlights, but the batteries may not hold out. Improvised lamps, which can provide a faint light for a whole day with a single loading of kitchen fats or oils, have been developed by Cresson Kearny (1972). These can be made of ordinary household items, e.g., glass jars, string and wire.

"... Good blast protection ..."



(Photo: TACDA Technical Report No. 2)

Mr. Kearny has also developed a highly efficient hand-operated air pump which can be made from ordinary household and hardware items (Kearny, 1972). These Kearny air pumps will probably be essential in the mines anyhow, to supplement the electrically-driven ventilation system. An actual test of a ventilation system installed in an unused Kansas City mine by Research Triangle Institute engineers in 1975 (Wright et al., 1975) indicated that Kearny air pumps would be effective in getting air into the furthest nooks and crannies.

These limestone mines will protect their occupants from nuclear effects far better than most other shelters. Even with open entrances the radiation from fallout near the entrance is not a problem because the occupants can move inside several hundred feet from the entrance and out of the path of the radiation. The penetration of radiation from surface fallout down through the rock ceiling will be undetectable inside the mine, contributing much less to the radiation dose than the natural radioactivity in the bodies of the occupants.

During the period when radioactive particles may be settling outside, it may be necessary to shut down or reduce the flow of air into the mines so radioactive dust won't be sucked into the shelter area. Filters and baffles may be installed to keep out the radioactive dust, but provisions must be made so that, in case a blast wave strikes the mine, they will survive or can be replaced. Fan blades tend to have a very low resistance to blast, so similar precautions would be necessary for fans in the ventilation systems. Implementation of these precautions may require more than a trivial effort, especially if large numbers

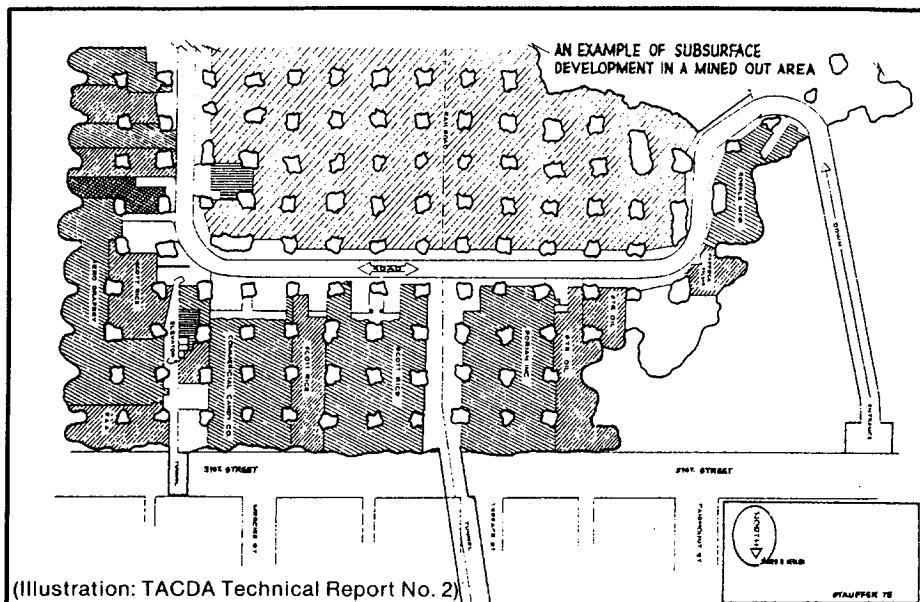
of people are to be sheltered in the mines. The greater the number of people in the mines, the more elaborate and expensive the ventilation system will have to be. An engineering study should be made showing how the costs of a blast-surviving or replaceable-after-blast ventilation system will go up as the number of people expected to be sheltered is increased. The cost of the ventilation system may restrict the number of occupants to less than the 25,000 mentioned before, which was based on targeting assumptions.

"... these mines are vulnerable to direct hits ..."

These mines will also provide as good blast protection as one could expect without going to the great expense of shock isolation (e.g., by mounting the rooms on giant springs). In underground structures there is a great deal of shake, rattle, and roll from nearby nuclear detonations on the surface. In addition to knocking out pieces of the ceiling, this motion may cause the entire structure to suddenly move upward, striking the occupants from below like a monstrous sledgehammer and causing possible injuries when the overpressures in the rock are in the vicinity of 50-100 psi and possible fatalities at greater overpressures. I would not rate the Kansas City mines as being safe for overpressures exceeding 50 psi because of possible ground motion effects unless a careful engineering analysis indicated otherwise.

There is an oil refinery about 4-5 miles from the entrance to Subterropolis. Even if a 20-megaton weapon were dropped on this target, which is unlikely because a smaller weapon would do, the overpressure at the entrances of the mine would not exceed about 25 psi. Again, as with fallout radiation, if the occupants are several hundred feet from and out of the line-of-sight of the entrances, the blast will be dissipated to harmless levels before it reaches them. The entrances (less than ten) to Subterropolis expose only a small fraction of the total frontal area to blast, and the shock wave entering these entrances will dissipate both by expanding into the larger volume and being broken up by the pillars. However, it would be prudent to calculate how far back the people need to be to avoid injury from possible blast.

It has been suggested that earth mounds be placed in front of the en-



(Illustration: TACDA Technical Report No. 2)

trances to deflect blast waves. Such mounds would somewhat reduce the blast winds at the mine entrances, but they seem to me to be unnecessary because the occupants can simply move back far enough into the mine to eliminate any blast injury from weapons detonated on targets four miles away.

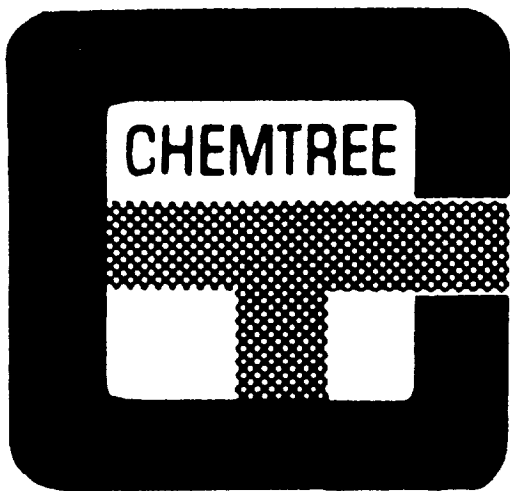
As mentioned before, *these mines are vulnerable to direct hits*, as are most existing hardened shelters. Figure 1 shows the effects of a one megaton thermonuclear weapon detonated above a mine roughly the size of Subterropolis. Most of the Soviet weapons, even in the MIRV'd arsenal, are estimated to be of one megaton and larger yield. In the illustration, the rock above the mine is assumed to be 200 feet thick everywhere. The rock and soil above Subterropolis actually varies between about 90 and 150 feet. Even if the roof were solid rock 200 feet thick everywhere, a one megaton weapon would "crater" through and kill the

occupants. The downward pressure from the nuclear fireball would collapse the roof so fast that a hot high-pressure blast wave would penetrate all corners of the mine. At the surface the overpressure in the blast wave over the farthest walls of the mine would be as high as 200 psi, indicating severe earth shaking. The combination of these effects would most likely result in sudden death for all occupants.

Because of the vulnerability of these mines to direct hits, it would seem prudent to restrict the number of people using each mine, because if they become attractive targets they will obviously not be useful shelters. Even if the occupancy in each of the 14 suitable mines is limited to 25,000 people, the total number of people sheltered (350,000) is significant. The fallout protection afforded by these shelters is unsurpassed, but the expenditure of some effort and money is required to make them habitable for these numbers of people. □

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In what was probably the most serious in-plant accident to happen in any nuclear plant throughout the world, no lives were lost. But headline hungry news media created a perilous incident that panicked people and even some authorities, feeding the irrational fears of many who oppose nuclear energy. Nothing comes to us without a price. The automobile kills 50,000 Americans each year. Living in San Francisco has the risk that 1906 will be repeated with a much heavier loss of life. Riding in an airplane has the possibility that something may go wrong as it did so tragically recently in Chicago. It is true that where humans are involved there will always be room for human error; we can build all sorts of fail-safe systems and provide all sorts of checks but man, being man, will make an occasional lapse. Yet that seems no more of a reason to refuse God's gift of nuclear power than it would have been to have outlawed electricity after the first man or first hundred men were electrocuted.

—*The Visitor* (Catholic publication)

Since we have very little capability to protect our population through civil defense measures, casualties here would be unimaginably high—perhaps well above 100 million—while Russian casualties would be considerably less, perhaps on the order of their World War II losses.

—*Admiral Thomas H. Moorer (Ret.), Chairman of the Joint Chiefs of Staff, 1970-1974—as quoted in The Retired Officer*

The executive council of the A.F.L.-C.I.O., while favoring export trade, says that "the list of recent Soviet acquisitions is enough to make Lenin's statement that the Western democracies would 'sell us the rope for their own hanging' seem like a prophecy." The executive council finds, somewhat belatedly, that we have shipped to the Soviets things which had application for "nuclear warheads, armor-piercing rockets, and submarine detection devices," among other direct military uses.

—*The Review Of The News*

If American wishes to preserve its freedom, it must remain a dominant factor in the world. America must accept the responsibilities that go with leadership and not unload them, which is precisely what has been happening under President Carter.

—*Malcolm Muggeridge*

It is time for the United States to stand up and say it is not a patsy.

—*Paul Nitze*

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SALT II INCREASES THE NEED FOR CIVIL DEFENSE

The Senate will reconvene this Fall to resume its consideration of SALT II, one of the most one-sided and dangerous treaties that this deliberative body has ever been asked to ratify. If the treaty is eventually approved, there will be an even greater need for civil defense. Indeed, a sharply enhanced civil defense will be one of the few significant options left to us by the treaty for the early 1980s.

Even without the SALT II treaty, the Soviets' growing military power will make the early 1980s, in Dr. Kissinger's words, a "period of maximum peril." During the next few years our land-based missiles will become vulnerable to destruction, our missile-carrying submarines will be wearing out faster than we can replace them, and our aging bomber force will be less likely with every passing day to be able to penetrate the Soviets' impressively sophisticated air defenses. On top of these ominous developments comes SALT II, a treaty which institutionalizes the Soviet strategic buildup and freezes the United States in its temporarily, and in a position of strategic inferiority.

SALT II permits the Soviets to continue to deploy ground-based ICBMs and missiles carrying 4 to 10 nuclear warheads, which threaten our Midwestern, Southern, and West Coast cities. Although the treaty prohibits development of our own new warheads, we cannot afford to ignore our own security and defense system until 1982. Moreover, in a very real and subtle way, SALT II encourages the Soviets to continue to develop their nuclear forces in a way that is to make them more deadly than all of our proposed nuclear defenses.

Our defense programs are no better under SALT II, and we must have agreed that our new defense missiles will be limited to half the number

of warheads carried by our present Poseidon missiles. They agreed to this despite their awareness that our missile-launching submarines will be reaching block obsolescence in the early 1980s and that we may have only half as many launching tubes at sea during this period as we have had for more than a decade.

The air-based leg of our strategic triad is similarly hampered by SALT II. The air-launched cruise missile which President Carter assured us could be deployed in inexpensive cruise missile carriers and could overwhelm the Soviets' air defenses through sheer numbers is hedged in by treaty restrictions. The treaty provides that only bombers can be used to carry cruise missiles and that only 28 missiles can be deployed on average in each plane. The use of commercial airliners, such as the 747, which can carry as many as 72 cruise missiles, is forbidden, thereby canceling out our advantage in non-military aircraft. MIRVing of cruise missiles, another area in which we are technologically advanced, is likewise prohibited.

Under these circumstances, it is no wonder that the Chairman of the Joint Chiefs of Staff recently testified before Congress that there are no "quick fixes" to our offensive arsenal that can make the early 1980s less dangerous years. But we can make them less dangerous through civil defense.

There are no SALT II restraints on making our population less vulnerable through the construction of shelters, evacuation planning, the stockpiling of food and drugs, and the production of instruments for radiological monitoring and decontamination. Since SALT II, if approved, will undercut our most promising options for offensive strategic weapons, now more than ever before, we must urgently attend to our defense.

Bl. L. L.

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