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BOARD OF DIRECTORS UP CLOSE

Frank Williams was appointed Executive Officer of the Building Industry Association Southern California, Inc. Baldy View Chapter in April of 1993. Working from the Association's Rancho Cucamonga offices, Williams plans, directs, budgets and coordinates all programs and administrative activities of the Region (the Baldy View Region includes all of San Bernardino County and all area east of the 605 in Los Angeles County).

Williams is the former Chief Executive Officer of HomeAid San Bernardino County, a 501(c)(3) corporation established by the BIA. HomeAid is helping to alleviate the homeless problem in San Bernardino County and Los Angeles County by building or renovating homeless shelters throughout the county, a former member of the California Board of Architectural Examiners (appointed by the California Assembly Speaker, a member of the Southern California Association of Governments (SCAG) Regional Advisory Council, Charter member of the San Bernardino County Sheriff's Crime Free Multi-Housing Program Advisory Council, Founder, Chairman of the Board and President of the Housing Action Resource Trust (HART), a 501(c)(3) non-



profit affordable housing provider. Since 1999 HART has gifted \$200 Million and assisted 50,000 families and individuals in purchasing homes (no government money used in this program). Williams was appointed to a 3-year term by Governor Gray Davis to the California Regional Water Quality Control Board-Santa Ana Region in November 2000. On April 1, 2002 San Bernardino First District Supervisor Bill Postmus appointed Williams to the County Workforce Investment Board (WIB) and is a member of the Presidents Circle for Children's Fund, Board Member Stephen's Hope, Board Member American Building Products Export Alliance, and is a San Bernardino County Sheriff's Special Services Bureau Deputy. Williams is a founder and current Board Member of the American Civil Defense Association.

Williams is a former six (6) term member of the Florida House of Representatives.

Williams served as Chairman of the Board of CUBB, Inc (Clay, Union, Baker, and Bradford County, Florida, a four county community action agency) for 4 years, Chairman of the Policy Council for Head Start organizing one of the first Head Start programs in the nation, and was appointed by President Lyndon Johnson as Local Chairman of the White House Forum on Aging. He is an alumnus of the University of Florida and Florida State University. Williams attended Atlanta University OEO Multi-Purpose Training Center completing many hours in the operations of community action agencies. Williams is a graduate of the OCD Staff College. He has worked in key executive positions in City and County government. In addition to his public service, Williams has owned and operated a building company, a mortgage company, real estate brokerage, property inspection company, and restaurant and lounge businesses.

Williams is the recipient of the 1998 Fair Housing Award from the Fair Housing Council of San Bernardino County.

Williams was named the National Association of Home Builders "Gary Komarow Memorial Executive Officer of the Year" in 1999.

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Message From The President

Sharon Packer - TACDA President

Dear TACDA Members:

We appreciate the many positive comments and suggestions we have received on our new updated Journal. Thanks also to all of our new members. Don't forget; this is YOUR Journal and we welcome meaningful input from each and every TACDA member.



We have had a request from a college student for information on food and water storage for apartment dwellers. Space can be a limiting factor for many of us. We invite our members, with knowledge in this area, to help out by writing an article or sending suggestions to our Editor.

We would like to welcome our youngest ever contributor for a JCD article. Thirteen year old Joshua, from Utah has sent us a series of articles for our 'Kids Corner' on radiation, fallout, and sheltering. This article came as a result of a school project. Many schools are sponsoring science fairs at this time of year. If your child has worked on a project related to personal preparedness or disasters (man-made or natural), we would be happy to consider it for publication. Please pass this request for articles on to your school, as well. Let's build awareness at an early age.

'Living a Sheltered Life' will continue to give suggestions on 'in place sheltering'. Many of our readers are in the process of planning summer shelter projects. Shelters are high price items. Improper installation can add unnecessary costs and may compromise your safety. Proper installation and choice of location for your shelter is critical. Now is 'high water' time. We hope this article will help you take a more critical look at your shelter location options.

In our last issue, Barbara Salsbury gave some excellent suggestions for preparing for power outages and caring for our battery needs. In this month's article she discusses: being prepared for emergency evacuations, great comfort foods for long term power outages, and very practical suggestions for dealing with mealy moths.

Spring, with all its beauty also brings the threat of flooding and unstable landmasses. Our 'Threat Analyses' section will bring you up to date on the latest information from NDEC and FEMA on landslide threats.

Please let us know how we're doing and what we can do to serve you even better. We appreciate and look forward to your suggestions and constructive criticism. Finally: Always remember to **STOP** (Study, Think, **O**bserve and **P**repare).

Thank you for your continued support and commitment.

God bless you, your families and our United States of America.

Sincerely, Sharon Packer, TACDA President spacker@tacda.org

Remember, If you are prepared, you have no need to fear.



Kathy Eiland - TACDA Executive Director

Dear Member,

I am going to begin my address with a question to you:

Do you know the meaning of the term "Civil Defense?"

Over the years, our name--The American Civil Defense Association-has been the focus of several topics of discussion. It has been suggested that, in order to keep up with the times. we should think about changing our name to something more modern and mainstream; something that could possibly be more recognizable to the current generation.

Concern has also been expressed in the past that members of the younger generation may not recognize the term "Civil Defense", and therefore, may simply dismiss any reference to it as either meaningless or of little or no value. In addition, it has been suggested that, although some younger people may have heard the term used, they may simply associate it with being another archaic cliché from the Cold War Era, and hence, of no importance to us today. However, I tend to see it in a different light. Perhaps, all that is needed is a bit of clarification.

This brings us back to my opening question. According to the Webster's Dictionary, Civil Defense is defined as being "the system of protective measures and emergency relief activities conducted by civilians in case of hostile attack, sabotage, or natural disaster".

(Executive Directors Take continued)

Maybe, it would be better to phrase the question a slightly different way...

"What system of protective measures have you put into place for yourself, your family, your community or your business that inevitably would be of the life-saving nature in the event of a natural or manmade disaster?

I would like for you to take just a few brief moments to STOP and to assess your current preparedness level. Are you prepared? Does your family have the knowledge and resources available to them to help them survive with dignity? To the business owner, have you done everything that you can do to help your employees first understand their threats, then assess their risks and finally prepare themselves and their families? What have you done to establish contingency plans for your company in the event disaster should strike?

Whether young or old, regardless of the terminology, lingo or buzz words that we may use, the fact remains that if we do not prepare ourselves, no one else will do it for us. Even though there are a lot of wonderful programs operating at many different federal, state and local levels that are designed to help all of us prepare for emergencies as well as mitigate their effects, the ultimate responsibility to prepare falls upon the individual.

In fact, by definition, "civil defense" refers to civilian activities. You and I are civilians, and it is our job to take the initiative to prepare ourselves and our families for all the various types of possible threats that we may face.

In closing, I would like to encourage you to **STOP** (Study, Think, Observe and **P**repare) and to strive to make the term "civil defense" a familiar part of your everyday language, but more importantly, regardless of how you say it, take the time and prepare.

Kathy Eiland - Executive Director kathy@tacda.org



Alex Coleman - TACDA Journal of Civil Defense Editor

Dear Reader,

Well, here we are, already in March, and into our second issue of the 2005 Journal of Civil Defense.

I know! I know! You're probably saying, "I'm so thrilled about and intrigued with the February issue! How can I possibly put it down and move on to March?" Well, I agree totally, and completely understand your dilemma. However, let me encourage you to take at least a couple of minutes to browse through this issue, and see for yourself what it has to offer. I'm sure that you'll be glad you did. You can always pick up the February issue again later on...

Once again, I would like to remind you to keep your eyes opened and to be watching for all of the new programs, services and member benefits that TACDA is currently working to implement. I would like to express my great appreciation to a couple of key individuals that have provided tremendous support and assisted the association greatly in our efforts to initiate these changes, and in our transition to become a better Two thumbs up to Trey TACDA. Edwards for his excellent graphics design and layout work, and to George Levitt, for his extraordinary consulting and support services.

OK. If you will recall, in our last issue, we made mention of a survey that would be included in this issue that would serve as a type of report card for our association. However,

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there has been a slight change in plans. This survey will be sent out to TACDA members in a separate mailing. When you receive your copy in the mail, I would like to encourage you to take a few moments to complete the enclosed questionnaire and return it to TACDA. If you would prefer, we will also be making an electronic version of this same survey available online for your convenience. By completing this short list of questions, you will be providing valuable feedback to TACDA that will enable us to better serve you, and to more effectively and efficiently meet vour needs as a TACDA member.

One final issue: As great as it may have been, we did make the following mistake in the February issue: The correct email address for submitting ideas, comments, thoughts, concerns or suggestions to TACDA for review is **jcd@tacda.org**. We encourage you to take advantage of this feedback channel as often as you like or need.

Well, once again, on behalf of The American Civil Defense Association (TACDA), I would like to thank you for your continued support and let you know that we are here to serve you.

Until next time, take care and stay prepared.

Kindest Reg<mark>ards,</mark> Alex Coleman, Editor <u>alex@tacda.org</u>





Use of Directed-Energy Weapons to Protect Critical Infrastructure By Jack Spencer and James Jay Carafano, Ph.D.

America's critical infrastructure (e.g., power plants, transportation hubs, and telecommunications facilities) is becoming increasingly vulnerable to precision missile attacks. Guided missile technology and the missiles themselves have been available for years, but the emergence of global terror networks, sophisticated smuggling techniques, and the post-September 11 security environment have made the threat of precision missile attacks even more serious. While technology transfer legislation and international agreements may help to control the spread of some technologies, relying solely on these mechanisms is wholly insufficient, especially when proliferation has already occurred. Therefore, it is essential that the United States actively defend its most vital nodes of critical infrastructure.[1]

To be effective against close-range missile attacks, such defenses must be cost efficient, safe, and swift.

Although the United States is not currently prepared to protect domestic targets against these threats, it does have the technology to do so with directed-energy weapons (DEWs), which include lasers, microwaves, electromagnetic pulses, and high intensity radio frequency waves. In 2000, for example, the Army used the Tactical High Energy

6

Laser to shoot down a rocket carrying a live warhead--the first time a laser has destroyed a missile in flight.

To ensure that these promising technologies are effectively fielded in a timely manner:

• Congress should fully fund directed-energy programs;

• The Department of Defense (DOD) and the Department of Homeland Security (DHS) should cooperate fully on their re-spective directed-energy efforts; [1]

• DHS should conduct a national needs assessment of critical infrastructure; and

• The United States should facilitate the sharing of directedenergy technology with its allies.

The Threat of Precision Strike Weapons:

Although rarely considered in homeland security assessments, precision attacks using missiles--traditionally thought of as conventional weapons-pose a threat to principal U.S. infrastructure. Precision missiles can engage targets at extended ranges, from one hundred yards to thousands of miles. Whereas the military already employs certain measures to thwart such stealthy attacks abroad and defend key military installations, other more diverse and soft nodes of U.S. critical infrastructure are less welldefended and often not defended at all. With an ever-increasing potential for terrorists to procure missile technologies and weapons, precision missile strikes could represent an enduring threat from both terrorists and rogue states. There are numerous precision systems around the world that could threaten America's critical infrastructure.

• Short-range threat. Man-portable air defense systems (MANPADS) were originally developed to defend against military aircraft. However, terrorists have used them to target passenger aircraft. They have precision strike capabilities, are globally available, and come in a variety of configurations and capabilities.**[2]** Not only could MANPADS be used to down an airliner, but they could also be used to target vulnerable points at ground facilities such as power plants. At about 35 pounds and 6 feet long, MANPADS are relatively easy to conceal and transport.**[3]**

Anti-tank guided missiles (ATGMs) have similar capabilities. An ATGM weapon, guidance system, and ammunition could fit in a car trunk, and ATGMs are readily available on the arms black markets. These systems could be used to target any number of critical infrastructure nodes, such as major financial facilities, water treatment plants, and even primary government buildings.

· Longer-range threat. The cruise missile threat is also growing. While relatively few nations have landattack cruise missiles, many have anti-ship cruise missiles. Although these systems were developed to target ships at sea, they could also be modified and turned against civilian infrastructure along America's shorelines, or they could be used simply as weapons of terror by launching them indiscriminately at populated areas. The short-range ballistic missile threat is also growing. Although few nations possess intercontinental-range capabilities, many nations do have short-range ballistic missiles. These missiles could be transported globally on cargo ships and launched at the U.S. homeland.

Why Directed-Energy Weapons?

Directed-energy weapons have singular characteristics that make them uniquely appropriate to addressing the short-range missile threat, and they would prove immensely valuable employed as part of critical infrastructure defense. They could protect high-risk structures, such as major government buildings, major transportation nodes, vital commercial assets, power

(Spotlight continued)

plants, and airports. Although other options may exist that could protect critical infrastructure (e.g., surface-toair missile batteries, fighter aircraft surveillance, and arms control legislation), in the long run none are as cost effective, precise, safe, or swift as a directed-energy defense system.

What Are Directed-Energy Weapons?

Directed-energy weapons include a host of technologies, including lasers and microwave radiation emitters. These weapons can inflict casualties and damage equipment by depositing energy on their intended target. Compared with conventional weapons, which rely on the kinetic or chemical energy of a projectile, DEWs hit a target with subatomic particles or electromagnetic waves that travel at speeds at or near the speed of light. DEWs generate very high power beams and typically use a single optical system to both track a target and to focus the beam on the target in order to destroy it.[4]

Lasers -- the most mature form of directed-energy weapon that can counter airborne threats -- form intense beams of light that can be precisely aimed across many kilometers to disable a wide range of targets: from satellites to missiles and aircraft to ground vehicles.[5]

Additionally, the laser beam can be redirected by mirrors to hit targets not visible from the source -- all without compromising much of the beam's initial power.

In 1996, the U.S. Army and the Israeli Ministry of Defense began to develop a short-range tactical high energy laser (THEL), which has since become the most successful laserbased anti-missile program in history. It is the most advanced directedenergy technology that the American armed forces have available to protect critical infrastructure. Demonstrating the unique threat flexibility of laser weapons, THEL has inter-



cepted dozens of threats and a growing list of different threat types, including a large number of Russian Katyusha rockets, five artillery shells, and, more recently, large caliber rockets.

The Army is preparing to build a mobile prototype (Mobile THEL or MTHEL), which will add mobility and high operational readiness. MTHEL could protect against the kind of rocket and mortar threats that U.S. troops have been facing in Iraq and Afghanistan. HORNET (a slightly different, upgraded MTHEL configuration) could also protect an airport against a full range of MANPADs and other precision strike threats.

Protecting Critical Infrastructure:

Future directed-energy weapons may offer the greatest improvements to U.S. defenses. For example, within a decade, American military developments in MTHEL could produce prototype weapons capable of providing area-wide point defenses against artillery, rockets, mortars, missiles, and low-flying unmanned aerial vehicles. Ground-based lasers are being designed not only for battlefield uses, but also to protect Israeli population centers from terrorist attacks with Katyusha rockets and other improvised rocket, artillery, and mortar systems.[6]

Such systems could be employed in the U.S. as well. These weapons could be deployed at airports to defend planes from attacks by shoulder-fired missiles (and by makeshift rockets and missiles) during takeoff and landing--the times when aircraft are most vulnerable. With most airports located in or near major urban centers, DEWs could help to address the near impossibility of providing adequate, credible security zones around airports. Furthermore, DEWs could defend coastal airports from attacks launched from a commercial or private ship loitering offshore--a potentially ideal platform for launching precision strikes.

Unique Advantages of Directed-Energy Weapons:

During the past two decades, directed-energy projects have advanced considerably in areas such as power, beam-control, and pointing and tracking techniques. This progress accounts for the U.S. government's growing interest in directed-energy technology. The unique features and advantages of DEWs may arguably revolutionize concepts of military operations, as well as greatly influence civilian protection.

(Spotlight continued)

· Operating at the speed of light. DEWs' first significant advantage is that their destructive mechanisms (electromagnetic beams) travel at the speed of light. Naturally, this almost instantaneous impact across great distances simplifies the tracking and intercepting phases of missile defense and greatly diminishes the target's ability to evade interception. DEWs effectively eliminate many problems associated with fly-out time existing weapons for because virtually no time elapses between firing a DEW and its impact on target.

• Gravitational immunity. Laser beams are unaffected by gravity or atmospheric drag. Simply, energy beams are essentially immune to gravity due to their lack of mass, which also frees them from the kinematic and aerodynamic constraints that limit more traditional weapons. Hence, the complex calculations required to determine ballistic trajectories and other flight characteristics of conventional munitions are irrelevant to directedenergy devices.[7]

• Precise and adjustable targeting. DEWs offer extremely precise targeting, which allows for surgical strikes with no collateral damage or fratricidal effects on friendly forces. This would be particularly advantageous when operating near volatile workstations, such as nuclear and chemical plants. A related feature of DEW technology is the ability to customize the weapon by adjusting the amount of energy deposited upon targets. This allows for a wide range of results: lethal or non-lethal, destructive or disruptive.**[8]**

As Air Force Chief of Staff General Ronald Fogelman articulated, "DEWs are the opposite of weapons of mass destruction--they are the most promising precision non-lethal weapons we have."[9]

 Affordable. Once fully deployed, DEWs will likely be able to intercept targets at a relatively low cost when compared to conventional munitions. Although the beam-generating system may be initially expensive to build and maintain, the price of engagements is minimal because the system expends only energy. In the case of missile defense, the threats are typically extremely cheap. On the other hand, interceptor missiles can cost millions of dollars, creating a tremendous cost imbalance that favors the attacker. With laser weapons, some missiles can be replaced with a DEW costing only a few thousand dollars per shot to achieve equivalent or superior probability of For example, a THEL shot is kill. estimated to cost about \$8,000.[10] In comparison, firing a PATRIOT (PAC-3) missile costs \$3.8 million; an AIM-7 Sparrow missile costs approximately \$125,000; and a Tomahawk cruise missile costs roughly \$600,000.[11] Firing a DEW is an extremely economical way to combat MANPADS and artillery, the current threats to U.S. critical infrastructures.



• Repetitive engagements. DEWs do have a capacity for repetitive engagements over protracted periods, constrained only by the availability of power and the need to vent the byproducts of beam generation (e.g., heat and chemicals). Conventional weapons, especially those firing precision-guided munitions, are typically constrained in the number of engagements by a limited supply of rounds. Even when the rounds are cheap expendables, space and weight limitations place a ceiling on how many engagements can occur without replenishment. DEWs are not entirely free of such considerations but they have the potential for much deeper magazines arising from the low-cost and high-energy potential of their power sources. Finally, a DEW provides the versatility of serving as a sensing device as well as a weapon. Lasers can be used not only to attack targets, but also to detect, image, track, and illuminate ("acquire") them. High-power microwaves operate in the same wavelengths as radars, giving them similar tracking potential in some applications.

• Diverse. Directed-energy weapons could be based on a variety of platforms, and they come in a wide range of power levels. For local asset defense, comparatively small systems can quickly kill very shortrange targets by focusing the laser's tremendous power precisely on a target's most vulnerable point.

Larger systems could generate even higher power levels, roughly equivalent to two sticks of dynamite, focused in a beam about the diameter of a basketball. Such a weapon can kill a target moving at one thousand miles per hour at a distance of up to several hundred miles, within a few seconds of acquiring the target.[12]

What Should Be Done?

To take full advantage of directedenergy weapons for use in securing (Continued on next page) (Spotlight continued)

critical U.S. infrastructure, the Bush Administration and Congress should take the following actions:

• Fully fund directed-energy research and development programs. While DEW research and development programs have been extremely successful during the past two decades, additional funding could provide an even greater revolution of both offensive and defensive weapons. Despite the numerous unique advantages of DEWs, the system has a few challenges or drawbacks. For example, as with all lasers operating in the lower atmosphere, dust, fog, smoke, and other battlefield obscurants can attenuate laser beam energy.[13] Another challenge is combining all the components of a laser weapon into a functioning and reliable system--an integration-level challenge.[14] With greater funding, research and development programs could overcome these difficulties.

• Require cooperation between the Department of Defense and the Department of Homeland Security. To facilitate greater efficiency in DEW research and development, the Administration should establish a cooperative program between the DOD and the DHS to ensure that directed-energy information and technology are freely exchanged between the two departments. Protecting commercial aircraft, major government facilities, nuclear and chemical power plants, and transportation nodes against precision missiles is a concern for both DHS and the U.S. military. By cooperating, these departments can accomplish more at an increased speed. It is imperative that they jointly develop both the means and the technologies necessary to meet the threat of missile attacks on critical infrastructure.[15] Without such cooperation, the departments will almost certainly duplicate research and produce less (at greater cost) than they would by working together.

· Conduct a national needs assessment of critical infrastructure. To ensure maximum efficacy, the DHS should conduct a national needs assessment of critical infrastructure, identifying and categorizing the potential security threats against specific structures. In the past, vulnerability assessments tended to focus on the threat of long-range weapons, such as intercontinental ballistic missiles, or close-in assaults, such as truck bombs. Regrettably, the variety of infrastructure targets has not been detailed, leaving significant uncertainty as to these structures' level of vulnerability. Researching this area of concern is imperative in order to deploy a DEW defense system effectively.

· Facilitate the sharing of directedenergy technology with U.S. allies. The Administration should establish a homeland security equivalent of the Foreign Military Sales program that would allow the sharing of directedenergy technology with friends and allies for critical infrastructure defense. The United States has already had some successful bilateral technology sharing of counter-terrorism tools with individual countries, such as Israel. However, while the mechanism for developing and transferring defense technologies on a military-tomilitary basis is fairly mature, the United States lacks a sophisticated approach to sharing technologies and lessons learned for civilian homeland security needs.

Countries with sophisticated technology, such as the United States and India, should enter into a serious dialogue to determine what a future homeland security technology development regime might look like. Among other things, such a dialogue would require: (1) a technology clearinghouse so that the partners know which technologies are available for transfer; (2) a method of setting standards so that technologies are understandable; (3) interoperable and transferable means for industry-toindustry dialogue; (4) predictable export-control requirements; and (5) acquisition mechanisms, such as joint development programs, licensing agreements, and something comparable to the Foreign Military Sales program.

Conclusion:

Although directed-energy weapons have been on the horizon for many years, never has their potential been so essential to homeland security. The United States needs to put the resources behind this promising technology now so that it can better protect its critical infrastructure in the near future.

[Jack Spencer is Senior Policy Analyst for Defense and National Security and James Jay Carafano, Ph.D., is Senior Research Fellow for National Security and Homeland Security in the Kathryn and Shelby Cullom Davis Institute for International Studies at The Heritage Foundation.]

1. As defined by Congress, critical infrastructure means "systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters." USA PATRIOT Act of 2001, 42 U.S.C. § 5195c(e).

2. For further reference on the threat of MANPAD, see James Jay Carafano, Ph.D., and Jack Spencer, "Facts About the Shoulder-Fired Missile Threat," Heritage Foundation Web Memo No. 328, August 14, 2003, at <u>www.heritage.org/Research/</u> HomelandDefense/wm328.cfm.

3. Northrop Grumman, "HORNET Commercial and Military Aircraft Defense System," August 14, 2003.

4. Loren B. Thompson, Ph.D., "The Emerging Promise (and Danger) of Directed-Energy Weapons, "Lexington Institute Capitol Hill Forum on Directed Energy, July 11, 2002, at

(Spotlight continued)

www.lexingtoninstitute.org/defense/energ yforum_thompson.htm (July 23, 2004). **5.** Ibid.

6. Josef Schwartz, et al., "Tactical High Energy Laser," presented at the SPIE Proceedings on Laser and Beam Control Technologies, January 21, 2002, pp. 1-6. TRW developed a fixed-site THEL under an \$89 million contract. In tests, the system has successfully shot down 25 rockets. It is, however, not currently capable of being deployed for operational use. The U.S. Army is developing a mobile version and has requested additional funding for the program. In February 2004, the Army's tactical laser project was formally transitioned into an acquisition program. The first prototype of the mobile laser is due to appear in 2008. See Loren B. Thompson, Ph.D., and Daniel Gouré Ph.D., "Directed Energy Weapons: Technologies, Applications, and Implications," Lexington Institute White Paper, February 2003, pp. 11-12 and 24-25, at www.lexington institute.org/defense/DirectEngery.pdf (July 23, 2004).

7. Thompson and Gouré, "Directed-Energy Weapons."

8. Ibid.

9. Ibid., p. 5.

 Sandra Erwin. "Directed Energy Weapons Promise Low Cost per Kill," National Defense Magazine, Sept. 2001, at <u>www.nationaldefensemagazine.</u> <u>org/article.cfm?ld=591</u> (July 23, 2004).
U.S. Navy, "Fact File," updated June 14, 2004, at <u>www.chinfo.navy</u> <u>.mil/navpalib/factfile/ffiletop.html#missiles</u> (July 23, 2004).

12. Thompson and Gouré, "Directed-Energy Weapons," pp. 19-37.

13. Ibid., pp. 3-18.

14. Ibid.

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15. James Jay Carafano, Ph.D., "Strategy and Security in the Information Age: Grading Progress in America's War on Terrorism," Heritage Foundation Lecture #824, March 17, 2004, at <u>www.heritage.org/</u> Research/HomelandDefense/hl824.cfm.





Carbon Dioxide (CO2) Accumulation in NBC Shelters

The following question was recently presented to TACDA President, and sheltering expert, Sharon Packer:

Could you please comment on the problem of carbon dioxide accumulation in NBC shelters? Sincerely, Mary.

Dear Mary, Thank you for your question.

In the event of nuclear attack, smoke and radiation levels could overcome our ventilation and filtration systems. Most systems are not designed to remove carbon monoxide or carbon dioxide from the filtered air. А hardened NBC shelter should have the capability to shut down for a period of 6 hours in sealed shelter operation. It is assumed, after this length of time, that carbon monoxide levels from the smoke outside would have dissipated. However, carbon dioxide, which is an internal threat, builds very quickly in occupied sealed areas. A concentration of CO2 over 3% in the sheltered area is unacceptable.

Each person will produce about .67 cubic feet/hr of CO2. We must, therefore, carefully plan our shelter space to accommodate each person with enough room to breathe safely and comfortably for the 6-hour period. In the event that you must shelter more people than your shelter can accommodate, you must plan to purchase a carbon dioxide scrubber or provide supplementation in the form of compressed air.

A shelter with 800 cubic feet of space will allow 6 people to breathe safely for that 6-hour period. In this example, the shelter could have an 8-ft. ceiling. The floor space could be 10 feet wide and 10 feet long. When we multiply 800 cubic feet by 3% the result is 24 cubic feet of carbon dioxide to reach the unacceptable level.

Each person produces .67 cubic feet/hr of CO2. Multiply .67 cubic feet per hour by 6 hours and the result is 4.02 cubic feet of CO2 for one person to reach an unacceptable level. Multiply 4.02 cubic feet of CO2 by 6 people, and the result is a total of 24.12 cubic feet of CO2 in the shelter to reach that unacceptable level. Our 800 cubic foot shelter referred to above will, therefore, provide the room needed for the 6 hour shut down time.

If 6 people can breath safely for 6 hours in 800 cubic feet, then it follows that each person needs his own 133 cubic feet of shelter space during the indicated sealed time. In that case, it would appear that the shelter could be rather small. However, it should be noted that the air space for breathing must be totally empty space. Therefore, you will want to add about 5 cubic feet for the mass of each person. You must also add additional space for food, water, supplies and furniture.

Refer to the TACDA web site for a more complete chart of shelter volume requirements compared to the number of people you wish to shelter.

[Editor's Note: If you have a question related to concepts of civil defense and/or disaster preparedness, we encourage you to "Ask an Expert" by sending your question to us via email at questions@tacda.org. We will be looking forward to hearing from you.]



Living a Sheltered Life

Sheltering for All Hazards By Sharon Packer, March 2005

Shelters designed against all hazards, must be engineered for blast, impact loading, tornado level winds, fire, ground movement, fallout, initial radiation, and dangerous air contaminants.

In my article last month, 'Concepts of Emergency Sheltering', I discussed shelter design requirements for various types of emergencies. I suggested that the design requirements for sheltering from weapons of mass destruction (nuclear, chemical, and/or biological) would in fact, offer protection against most all man-made and natural disasters, not including floods and landslides. In this article, I would like to re-visit 'nuclear, chemical, and biological' (NBC) sheltering, with more specific details for shelter installation. Watch for following issues of the journal where we will discuss construction material, entrances, doors, floors, electrical systems, ventilation and filtration systems for NBC shelters.

Please be advised that all shelter engineering, construction and installation should be done under the direction of qualified, certified and experienced engineers. Soil types such as sand, clay, gravel, large rocks, bedrock, shale and perma frost as well as water table differences all pose unique problems in installation and design. One solution will not fit all situations.

I propose that shelters constructed of steel plate tanks or corrugated steel culvert pose the greatest overall solution for all hazard and NBC sheltering. These shelters should be between 8 and 10 feet in diameter and in lengths less than 60 ft. The arch on the tank provides the basis for the proper blast protection through 'earth arching', and steel is strong, pliable, inexpensive and easily customized to size and depth of cover.



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The use of used steel tanks, which have held petroleum or caustic chemical products, is generally not recommended. Even after the steam cleaning and sand blasting of used tanks, the fumes inhaled can be carcinogenic or cause other illnesses. There is also a great danger of explosion when cutting access holes into previously used tanks.

Steel plate tanks are watertight and can be placed into damp soil. However, damp soil will compromise earth arching and therefore, negatively affect the blast protection of the shelter. The outside should be completely covered with an epoxy type paint to protect against rusting. These tanks are very heavy and the purchase price is usually about 50% higher than the price of corrugated steel shelters.

Corrugated Steel Shelters

Because it is relatively lightweight, corrugated steel shelters can be easily handled and transported in 40-ft. to 60-ft. lengths. Entrance tube construction on corrugated steel shelters is simplified and less costly than smooth plate. The lighter weight also results in less expensive installation costs.

Corrugated steel is not watertight. These shelters must be placed above the water table. In areas of high water, the earth may need to be bermed (forming a mound), in order to get the proper blast and radiation protection.

Installation

Your certified installers should know to follow the installation requirements of the National Corrugated Steel Pipe Association (NCSPA). Make sure your installer understands and has a copy of those installation requirements. The installation and design recommendations we are making in this article are not meant to be allinclusive nor complete. Always follow the instructions of your own certified engineers and installers.

(Living a Sheltered Life continued)

Bedding Material

A bedding material of 3/4 inch minus (less than 3/4 inch) crushed rock should be placed under and around the pipe to the elevation at the point of maximum width of the pipe (springline). For instance, a 10-ft. diameter shelter should have this bedding material placed up to the radius (5-ft. level) of the tank. This bedding material should be washed, crushed sharp edged rock and should be completely devoid of soil. This size rock flows easily around and under the tank to fill all voids and will properly support the tank after being backfilled. Do not use pea gravel as it is round and will not earth-arch properly, even though it is often used for large sewer pipe installations. Do not use engineers fill, road base, or earth for this application because in a deep hole it is very difficult and dangerous to compact this material properly. Again, pea gravel is unacceptable, because it does not arch properly and could allow the tank to collapse catastrophically under blast loading.

Special care should be taken to place this bedding material evenly on both sides of the tank, in uniform horizontal layers to support the tank shape. Adequate support must be provided in all haunch areas of the pipe before back filling above the springline. Voids or uneven loading can result in movement, distortion and even failure of the pipe shelter.

Earth Arching

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Earth arching occurs when arched tanks are filled to twice their diameter. Overpressure protection levels near 200 psi can be reached with proper earth arching. Clay type soils and damp soils will not arch properly.

Clay type soils pose unique problems. After backfilling over the shelter, the excavated area becomes a 'swimming pool' as water draining into the disturbed soil will not be able to drain properly. Specially designed 'French drains' or other types of drain fields must be placed at shelter depth for proper drainage to occur. Wet soils, fine sand and clay type soils will not arch properly. However, sharp edged sand will give the arch protection needed. There are simple tests that can be performed on your soil that will give the information you need. Consult a civil engineer if you are in doubt. Look for self testing information on earth arching in our coming TACDA Academy courses.

Fill

Blast shelters require double their diameter of fill for proper blast protection. For example, an 8-ft. diameter shelter should be excavated to the 16-ft. level. Crushed rock should be placed to the 4-ft. level. Twelve additional feet of fill should bring the fill to grade. Do not drop large boulders onto the tank. Heavy equipment or vehicles should not be driven over the sheltered area until backfill has been placed to double the diameter of the shelter.

It is essential that the correct equipment be used, both for safety and economic reasons. It is recommended that a track-hoe be used for excavating holes over 10 feet deep. Shelters weighing over 2,000 lbs. and/or with lengths over 20-ft. should be lowered into the hole with a mobile crane with a minimum capacity of 50 tons. While the shelter itself may not weigh more than 10,000 lbs., the extra capacity of the crane will allow it to operate further from the edge of the hole. Frequently, the crane is not able to operate near the excavation because of debris or fill material remaining on the job sight.

Be sure to look for more complete information in courses soon to be made available through the TACDA Academy.

In our next issue, look for 'Choosing Your NBC Shelter Location'. This article will also cover NBC construction material requirements and entrance configurations.



ADA Ruling in Emergency Preparedness Planning in Montgomery County Precedent-Setting Decision on Emergency Evacuations For People with Disabilities

For the first time, a court has declared that the Americans with Disabilities Act (the ADA) require places of public accommodation to consider the needs of people with disabilities in developing emergency evacuation plans.

This groundbreaking decision – issued on December 28, 2004 by Judge John W. Debelius III of the Circuit Court for Montgomery County, Maryland - means that shopping malls, stores, restaurants, movie theaters, museums, and other private entities subject to the ADA throughout the country, whether landlords or tenants, must now seek to accommodate people with disabilities in the development and modification of emergency evacuation procedures.

"This is a significant decision that should greatly enhance the safety of persons with disabilities in the post-September 11th world," said Elaine Gardner, Director of the Disability Rights Project at the Washington Lawyers' Committee for Civil Rights and Urban Affairs. "The ADA always has been understood to help get people with disabilities into places of public accommodation. Now, for the first time, it also has been found to

(Focus On Public Safety continued)

require that public places try to get those same people out in the event of a fire, terrorist attack, or other emergency."

The court's significant decision arises out of a lawsuit that was filed in Spring 2003 by Katie Savage, a Washington, D.C. resident who became trapped during an emergency evacuation in a local shopping mall that had no accessible exits for persons with disabilities.

Ms. Savage, who uses a wheelchair, was shopping at a Marshalls store in Silver Spring, Maryland's City Place Mall on September 3, 2002, when the store and the Mall were evacuated. After Marshalls required her to exit into an area of the Mall that is below ground level, Ms. Savage found that she was trapped there and unable to evacuate, because the elevators were shut down and all the exits had stairs. evacuation plan and Marshalls' corporate-wide evacuation policies.

In briefs filed with the court last Fall, Marshalls took the position that the ADA does not require places of public accommodation to modify evacuation plans in order to accommodate the needs of people with disabilities. The court, however, rejected Marshalls' view and held that "a store's nationwide evacuation procedures would certainly constitute a public accommodation's 'policies." Therefore, the court wrote, "it is certain that Title III of the ADA does apply to this situation."

"I am delighted by the court's decision and hope that it has a lasting impact on improving safety for people with disabilities," said Ms. Savage. "Regrettably, Marshalls and other major retailers have seen fit to evacuate non-disabled persons, while leaving people with disabilities to fend for themselves in an emergency. That is not only a poor business

From the ADA Guide for Local Governments:

Action Step:

Adopt policies to ensure that your community evacuation plans enable people with disabilities, including those who have mobility impairments, vision impairments, hearing impairments, cognitive disabilities, mental illness, or other disabilities, to safely self-evacuate or to be evacuated by others. Some communities are instituting voluntary, confidential registries of persons with disabilities who may need individualized evacuation assistance or notification. If you adopt or maintain such a registry, have procedures in place to ensure its voluntariness, guarantee confidentiality controls, and develop a process to update the registry. Also consider how best to publicize its availability. Whether or not a registry is used, your plan should address accessible transportation needs for people who use wheelchars, scooters, or other mobility aids as well as people who are blind or who have low vision.

Abandoned by store employees and trapped, Ms. Savage resolved to use her terrifying ordeal as a vehicle for ensuring that fellow citizens with disabilities would not be similarly victimized in emergency evacuation situations. Ms. Savage joined the Disability Rights Council of Greater Washington (the DRC) in filing a lawsuit against Marshalls and City Place Mall that alleged violations of the ADA in both the Mall's emergency decision, it is also now against the law."

One of Katie Savage's attorneys, Steve Hollman, agreed. "We've all heard stories about people with disabilities being trapped and left to die on September 11th and in other emergency situations," said Mr. Hollman, a partner with Hogan & Hartson L.L.P. in Washington, D.C. "Hopefully, this decision will serve as a wake-up call to public accommodations across the country that they must start considering the needs of people with disabilities in their evacuation plans."

The opinion of the Court also was significant for refusing to allow a tenant to abdicate its responsibility to patrons with disabilities by merely placing them outside a store's entrance in an emergency evacuation situation and leaving actual evacuation to a shopping mall's owners. Additionally, the opinion recognized Ms. Savage's standing to bring her ADA claims against Marshalls. Despite the fact that Ms. Savage had not visited the Marshalls fitting room at City Place Mall, she was found to be able to seek barrier removal there, as "a Plaintiff need not encounter every barrier in a store to bring a claim for all the store's ADA violations." Moreover, the Court found that Ms. Savage had standing to remedy Marshalls' corporate-wide emergency evacuation policy - which is in effect at more than 672 Marshalls stores because "where the harm alleged is directly traceable to a written policy... there is an implicit likelihood of its repetition in the immediate future." The Disability Rights Council of Greater Washington also was found to have standing to proceed. As a result, the case will now proceed to trial to determine whether Marshalls and City Place Mall are in violation of the requirements of the ADA.

Ms. Savage is represented by the law firm of Hogan & Hartson L.L.P. and the Washington Lawyers' Committee for Civil Rights and Urban Affairs. An important Amicus Curiae brief was submitted to the Court by the law firm of Howrey, Simon, Arnold & White, on behalf of the American Association of People with Disabilities and several other organizations of people with disabilities.





By Barbara Salsbury

With the headlines and media reports still reeling with the news of disaster after disaster many people are finally hearing the wake-up call and sincerely trying to become prepared. March and Spring many times require you to endure heavy rain, floods, more ice and snow and so on, before the much looked-for flowers and sun appear. So thoughts and plans toward preparedness are indeed very practical at this season.

Disaster Preparedness and 72hour Kits are *not* the same!

Being prepared for a disaster and having a 72-hour kit are not the same. You need to understand the difference. There is a lot of confusion nowadays about what it means to be prepared. Being prepared at home does not begin and end with a preparedness kit, though having a preparedness kit is an important part of being prepared. To be prepared for a disaster, you need to be ready to take care of yourself in your home, and also away from your home, in case of an evacuation.

The purpose of a 72-hour evacuation kit is to provide all the supplies you may need to care for yourself completely for a minimum of three days, and in many instances, much longer, in case your are forced out of

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your home on the spur of the moment. For example, a chemical spill on some nearby train tracks could force the evacuation of several square miles of homes for several days until it is contained. A bomb threat could evacuate a neighborhood with only a few minutes notice. Earthquakes, floods, fires, and many other things can also cause evacuations.

If you are evacuated from your home, you need to have a kit prepared that you can grab as you go out the door. It will become your home away from While it is likely that an home. evacuation shelter will eventually be set up for you to stay in, it may be a while before it is up and running with all the food and supplies you'll need. Statistics show that it usually takes a minimum of 72 hours for authorities (the government or Red Cross, etc.) to get set up and organized after a major disaster. During those 72 or more hours, you are on your own. That is why you have a 72-hour kit: to take care of yourself until help is available.

Even after assistance is organized, many of the items that would help you at a shelter during an evacuation are there on a donation basis. There may or may not be enough for everyone. So while your basic needs will usually be met (food, water, shelter, basic first aid, etc.) there's no guarantee more than that will be available. It's up to you to be ready to care for yourself.

Being forced out of your home is not the only problem you may face. Some disasters may occur that leave you within the safety of your home, only without power or utilities, or any means of obtaining supplies for days or even weeks. This situation repreparation. quires disaster as compared to evacuation preparedness. You're not forced out of your but you special home. need preparations in order to cope.

Preparedness for this type of disaster includes having on hand sufficient food and non-food supplies to last until the stores open again, or until you are able to get to the store. This food should require little or no preparation or refrigeration. Think through the ramifications of being without power for any length of time and make plans to deal with that situation. Butane or Sterna stoves and fuel would allow you to heat the food you have or prepare simple meals. Several lanterns, flashlights, a source for heat, extra blankets, and water are some of the things to have on hand when you're faced with a crisis.

Don't be discouraged. Getting prepared can seem like a big job, probably because it is. But it's not impossible. Start with a plan and work consistently to learn the skills and gather the supplies you need to be ready for whatever may come. The feeling of peace you'll receive by being prepared is worth all your efforts.

Emergency Evacuation: Here is how to start - begin with a box!

In the event that you are faced with an evacuation situation, you need to be prepared. **Don't just think about it ... do something now!** Evacuation preparation is not an all-or-nothing thing. In a crisis, any preparation, even a minimal kit, would be far

(Personal Practical Preparedness continued)

superior to having nothing at all to rely on. Here is how to start: begin with a box!

Begin with what you have and build on it, even if all you currently have is a cardboard box. Your goal is security – not luxury-in a kit. There are many container options to choose from when creating a 72-hour evacuation kit. But until you have the time and budget to make that selection, begin right now by going to the grocery store and obtaining a sturdy waxed produce box with "handle holes".



An apple box with the lid that fits completely over the bottom so that there are double walled sides is a good example. This can be used as a makeshift kit container. You should replace it with a better container as soon as possible, but until you do, it's a start. Since this box is not waterproof at all, placing the contents in an untreated trash bag and securely fastening it would provide protection against water. (An untreated trash bag will be either clear or white.) Strapping or tying the box when it's full will increase its stability and may even function as a handle.

Then you begin the gathering process: foods that will work, a complete change of clothing, a flashlight, a battery-powered radio, etc. You can make do with whatever you have on hand until you can replace it with something more appropriate or more efficient. It will very quickly become evident that you must adjust your mindset. THINK SMALL. Everything needed for one person <u>must fit into</u> that container. Remember, it could become your home away from home. And until you can replace these items with better ones, you can be satisfied that at least you've made a start. Now make it a priority to add one or two items to your kits every payday.

You will need a kit or box for every member of the household. Do your homework as to the kind of kit containers that will work for your household members. You will need to be able to identify your kit in a shelter area so clearly label and mark each kit. Use waterproof markers and, then as an added measure, cover the identification with several layers of clear strapping tape. One way to involve family members is to allow children (and adults) to decorate their own kit. While decorating take the opportunity to discuss the purpose of the kit, the important items that will be in it, who and how to contact help at the shelter, what will create security in that kit, such as a favorite blanket, bear or book, and most importantly, that this is an important box/kit for them. It's not a toy and it's not a game. But by the same token, it's NOT packed with fear. Just the opposite; it's packed with confidence.

You may be considering buying a ready-made evacuation kit from a store. This may or may not be a good idea. There are many on the market that are good, but there are also some that would be just a waste of your money. Carefully ascertain what items are in a commerciallyprepared kit before you buy to see if it will work for you. However, and I can't emphasize this enough, any ready-made kit you buy, no matter how extensive or expensive, is only a starting point. Commercial kits are not complete. The lists are generic. They must be personalized by adding your own clothing, personal items, medications, and other things that you individually will need. If you want to start with a commercial kit, that's fine. Just don't end with it in the same condition as you bought it.

Make it your own, and make it work specifically for you.

These are just a few thoughts to get you started. Don't wait. Start now. For the how-to details you need for you and your family get a copy of "<u>Plan...Not Panic</u>" located online at www.preparednessonline.com.

A New Meaning for "Winter Wonderland": Some Goodies To Help Get You Through A Long-Term Power Outage!

"Winter Wonderland" may now mean that everyone in the land is wondering whether or not there will be any power. When we apply that question to the difficulties of winter and its inevitable storms, it can present a dismal situation. If we have to be without power for any length of time it would be a good thing to help one another get through it with a little snack here and there to boost morale.

One idea that comes to mind that also stretches your buying power is to pay attention to the sales after the major holidays. M&M's, Snicker's, Reese's and many other candy-lover favorites in their holiday packaging and colors will be drastically marked down. I have not discovered that holiday-colored M&M's taste differently from regular-colored M&M's, but I have discovered a great difference in price right after a holiday.

These types of commercial candies keep very nicely in gallon jars with tight-fitting lids. They easily have a shelf life of several months, (a little more for the candy bars if you keep them in proper containers in the freezer), but that has to be qualified: **ONLY IF THEY ARE NOT DIS-COVERED AND SNITCHED PRE-MATURELY.** Chocolate may turn white after a few months of storage, but that does not affect its flavor. The candies with nuts in them will not keep as long as others because of the problems with rancidity.

(Personal Practical Preparedness continued)

Snack and treat recipes that require no baking and may be cooked on a butane or Sterna-type stove may provide some solutions for power outages. If you have a gas kitchen range you already have preparedness-bonus points.



Crispy-Rice Squares

1⁄4 cup butter or margarine 1 10 oz. pkg. marshmallows, or 40 regular marshmallows, or 4 cups mini marshmallows

5 cups crisped-rice cereal

Melt margarine over low heat and add marshmallows. Stir until melted and cook approximately three minutes. Add crisped rice and stir well. Press into a greased 13x9x2 inch pan. If using your hands to press into the pan, grease or oil your hands, and remember the mixture will be extremely hot.



No-Bake Cookies 2 cups sugar 1 cube butter or margarine ¼ cup cocoa ½ cup milk (reconstituted works) 3 cups quick or regular rolled oats 1 tsp. vanilla

Mix sugar, margarine, and milk together in a saucepan. Bring to a boil for one minute. Mix in oats, cocoa, vanilla and nuts. Measure teaspoonfuls and place on waxed paper, aluminum foil or plastic wrap.

It's probably a good idea to make a double-batch. It is amazing how fast these items will disappear during a power outage with no television or computer games for distraction.

Dealing with Mealy Moths

One of the questions I'm asked the most is how to get rid of mealy moths. At one time or another, they invade almost everyone's cupboards. They're very persistent and can destroy a lot of food if allowed to remain unchecked.

You probably brought the first batch of mealy moths home from the grocery store. In order to get rid of them, you have to find out where they have "made their home". Pav attention to the cupboards where you see large numbers of the moths. In vour cupboards or pantry, you will generally see bunches of the moths clustered on the undersides of shelves or on the ceiling. The young are in the form of larvae, which crawl from one box or package to another. One of the miserable things about the larvae is that they can actually get into jars of grain or cereal by crawling up the threads of glass at the top where the lid screws on. They can chew through plastic as well as cardboard.

You will need to go through the items in your pantry box by box. If larvae are in the product, the product will "bunch together" with webs and fine threads. There will be a grainy dust on the sides and bottom of the package, as well as throughout the product.

When you find packages full of the moth or larvae, don't chuck them into the wastebasket in the kitchen. The moths, which are attracted by light, will crawl out of the waste-basket and infiltrate any other food containers or cupboards that they can get into. When an infestation is really bad, fill garbage bags with the boxes and packages of infested food, and then take them outside and spray bug spray directly into the garbage bag *before* putting the bag into the main trash outside.

Once you find the source of the culprits and clean out the cupboards, you ought to clear the shelves and spray the cupboards and cracks with a good bug spray. Yes, it can be a big job, but the surviving larvae can be hidden in the cracks, grow and develop into moths, and you will eventually have to repeat the same cycle all over again.

In order to stay ahead of them, you will need to use a commercial product. After you have cleaned out infested packages and shelves, go to a store that has a good pest-control section, where mouse traps, etc., are. There is a pest strip for flying insects. Mealy moth is one of the first insects listed in their "target" listing. I believe the product is made by Dow, in a bright yellow package. It comes in a waxy cake form, approximately 2"x4" and is hung up with a hook. Simply hang several of them in your pantry and cupboards. They work quite well, though it will take more than one for a pantry or kitchen.

The bad news is that you can bring more home from the stores at any time or they can come in from the neighbors. Another option is to adopt them and tell your friends that you are growing a new crop of house pets that require no special pet foods. Especially since you will be sharing yours! Should you decide to have a new species of house pets I would love to hear how you train them.

Again may I encourage you to stay enthused as you work toward your preparedness goals. I look forward to hearing your questions and comments at <u>feedback@tacda.org</u>.

[Don't forget to look for me at <u>www.preparednessonline.com</u> and in the next issue of The Journal of Civil Defense.]





Landslides and Mud Flows

[Preparedness Note: Learn if landslides, including debris flows, could occur in your area by contacting local officials, your state geological survey or department of natural resources, or the geology department of a state university. Get detailed information on specific locations that are vulnerable to landslides. Also request a professional referral for a detailed landslide-vulnerability analysis for your property, and take corrective measures if necessary.]

Overview of Threat:

Landslides occur in all U.S. states and territories and occur when masses of rock, earth, or debris move down a slope. Landslides may be small or large, and can move at slow or very high speeds. They are activated by storms, earthquakes, volcanic eruptions, fires, and human modification of the land. Debris and mud flows are rivers of rock, earth, and other debris saturated with water. They develop when water rapidly accumulates in the ground, during heavy rainfall or rapid snowmelt, changing the earth into a flowing river of mud or "slurry." They can flow rapidly down slopes or through channels, and can strike with little or no warning at avalanche speeds. They can also travel several miles from their source, growing in size as they pick up trees, large boulders, cars, and other materials along the way. Landslide, mudflow,

and debris-flow problems are occasionally caused by land mismanagement. Improper land-use practices on ground of questionable stability, particularly in mountain, canyon, and coastal regions, can create and accelerate serious landslide problems. Land-use zoning, professional inspections, and proper design can minimize many landslide, mudflow, and debris flow problems.

Detailed Analysis:

The term "landslide" describes many types of downhill earth movements ranging from rapidly moving catastrophic rock avalanches and debris flows in mountainous regions to more slowly moving earth slides. Some landslides move slowly and cause damage gradually, whereas others move so rapidly that they can destroy property and take lives suddenly and unexpectedly. Gravity is generally the force driving landslide movement. that Factors trigger landslide movement include heavy rainfall, erosion, poor construction practices, freezing and thawing, earthquake shaking, and volcanic eruptions. Landslides are typically associated with periods of heavy rainfall or rapid snowmelt and tend to worsen the effects of flooding. Areas burned by forest and brush fires are particularly susceptible to landslides.

Debris flows — sometimes referred to as mudslides, mudflows, lahars, or debris avalanches — are common types of fast-moving landslides. These flows generally occur during periods of heavy rainfall or rapid snowmelt. Generally, they start on steep hillsides as shallow landslides that liquefy and accelerate to speeds that are typically about 10 miles (16 kilometers) per hour, but can exceed 35 miles (56 kilometers) per hour.

The consistencies of debris flows range from watery mud to thick, rocky mud that can carry such large items as boulders, trees, and cars. Debris flows from many different sources can combine in channels, and, when this happens, their destructive power can increase greatly as they flow downhill and through channels, growing in volume with the addition of water, sand, mud, boulders, trees, and other materials. When the flows reach flatter ground, the debris spreads over a broad area, sometimes accumulating in thick deposits that can wreak havoc in developed areas.

What To Do Before A Landslide Or Debris Flow

1. Contact your local emergency management office or American Red Cross chapter for information on local landslide and debris flow hazards.

2. Get a ground assessment of your property. County or state geological experts, local planning department or departments of natural resources may have specific information on areas vulnerable to landslides. Consult an appropriate professional expert for advice on corrective measures you can take.

- 3. Minimize home hazards.
 - Plant ground cover on slopes and build retaining walls.
 - In mudflow areas, build channels or deflection walls to direct the flow around buildings.

• Remember: If you build walls to divert debris flows and the flow lands on a neighbor's property, you may be liable for damages. Explore a neighborhood or special district project.

(Threat Analysis Resource continued)

• Install flexible pipe fittings to avoid gas or water leaks. Flexible fittings are more resistant to breakage.

4. Familiarize yourself with your surrounding area.

• Small changes in your local landscape could alert you to the potential of greater future threat.

• Observe the patterns of stormwater drainage on slopes and especially the places where runoff water converges.

•Watch for any sign of land movement, such as small slides, flows, or progressively leaning trees, on the hillsides near your home.

5. Be particularly observant of your surrounding area before and during intense storms that could heighten the possibility of landslide or debris flow from heavy rains. Many debris flow fatalities occur when people are sleeping.

6. Talk to your insurance agent. Debris flow may be covered by flood insurance policies from the National Flood Insurance Program (NFIP).

7. Learn to recognize landslide warning signs.

• Doors or windows stick or jam for the first time.

• New cracks appear in plaster, tile, brick, or foundations.

• Outside walls, walks, or stairs begin pulling away from the building.

• Slowly developing, widening cracks appear on the ground or on paved areas such as streets or driveways.

• Underground utility lines break.

• Bulging ground appears at the base of a slope.

• Water breaks through the ground surface in new locations.

• Fences, retaining walls, utility poles, or trees tilt or move.

• You hear a faint rumbling sound that increases in volume as the landslide nears.

• The ground slopes downward in one specific direction and may

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begin shifting in that direction under your feet.

What To Do During A Heightened Threat (Intense Storm) Of Landslide Or Debris Flow

1. Listen to radio or television for warning of intense rainfall.

• Be prepared to evacuate if instructed by local authorities or if you feel threatened.

• Should you remain at home, move to a second story if possible to distance yourself from the direct path of debris flow and landslide debris.

2. Be alert when intense, short bursts of rain follow prolonged heavy rains or damp weather, which increase risks of debris flows.

3. Listen for any unusual sounds that might indicate moving debris, such as trees cracking or boulders knocking together. A trickle of flowing or falling mud or debris may precede larger landslides. Moving debris can flow quickly and sometimes without warning.

4. If you are near a stream or channel, be alert for sudden increases or decreases in water flow and for a change from clear to muddy water. Such changes may indicate landslide activity upstream. Be prepared to move quickly.

5. Be especially alert when driving. Embankments along roadsides are particularly susceptible to landslides. Watch for collapsed pavement, mud, fallen rocks, and other indications of possible debris flows.

6. Evacuate when ordered by local authorities.

What To Do During A Landslide Or Debris Flow

1. Quickly move away from the path of a landslide or debris flow.

2. Areas generally considered safe include:

- Areas that have not moved in the past.
- Relatively flat-lying areas away from drastic changes in slope.

• Areas at the top of or along ridges set back from the tops of slopes.

3. If escape is not possible, curl into a tight ball and protect your head.

What To Do After A Landslide Or Debris Flow

1. Stay away from the slide area. There may be danger of additional slides.



(Threat Analysis Resource continued)

2. Check for injured and trapped persons near the slide, without entering the direct slide area. Direct rescuers to their locations.

3. Help a neighbor who may require special assistance--large families, children, elderly people, and people with disabilities.

4. Listen to local radio or television stations for the latest emergency information.

5. Landslides and flows can provoke associated dangers such as broken electrical, water, gas, and sewage lines, and disrupt roadways and railways.

• Look for and report broken utility lines to appropriate authorities. Reporting potential hazards will get the utilities turned off as quickly as possible, preventing further hazard and injury.

• Check the building foundation, chimney, and surrounding land for damage. Damage to foundations, chimneys, or surrounding land may help you assess the safety of the area.

6. Watch for flooding, which may occur after a landslide or debris flow. Floods sometimes follow landslides and debris flows because they may both be started by the same event.

7. Replant damaged ground as soon as possible since erosion caused by loss of ground cover can lead to flash flooding and additional landslides in the near future.

8. Seek the advice of a geotechnical expert for evaluating landslide hazards or designing corrective techniques to reduce landslide risk. A professional will be able to advise you of the best ways to prevent or reduce landslide risk, without creating further hazard.

How Can I Protect Myself From A Landslide?

Landslides generally happen where they have occurred in the past, and in

identifiable hazard locations. Areas that are prone to landslides include existing old landslides, the bases of steep slopes, the bases of drainage channels, and developed hillsides where leach-field septic systems are used.

Areas that are typically considered safe from landslides include areas that have not moved in the past; relatively flat areas away from sudden changes in slope; and areas at the top of or along ridges, but set back from the edge of slopes.

People can reduce their personal risk by learning about potential local landslide hazards and taking steps to reduce those hazards. Landslides are usually isolated events occurring without public warning. If you live in a landslide-prone area, be alert, particularly during periods of heavy rainfall or snowmelt or after a wildfire. If you see signs of a landslide or suspect a landslide may occur, you yourself must make the decision to evacuate.

Media and Community Education Ideas

1. If your area is prone to landslides, ask your local newspaper or radio or television station to:

• Do a series on the dangers of landslides and debris flows. Do a story featuring interviews with local officials about land use management, zoning regulations, and building codes for landslide safety.

• Highlight the importance of staying alert to land and rainfall conditions.

• Run public service ads about how to protect lives and property in a landslide.

• Report on what city and county governments are doing to reduce the possibility of landslides.

2. Help the reporters to localize the information by providing them with the local emergency phone number for the fire, police, and other emergency medical services departments (usually 9-1-1) and emergency numbers for the local utilities

and hospitals. Also provide the business telephone numbers for the local emergency management office, local American Red Cross chapter, and state geological survey or department of natural resources.

3. Work with officials of the local fire, police, and other emergency medical services departments; utilities; hospitals; emergency management offices; and local American Red Cross chapters to prepare and disseminate guidelines for people with mobility impairments about what to do if they have to evacuate.

4. Support your local government in efforts to develop and enforce land use and building ordinances that regulate construction in areas susceptible to landslides and debris flows. Buildings should be located away from steep slopes, streams and rivers, intermittent-stream channels, and the mouths of mountain channels.

Facts and Fiction:

Fiction: Landslides are caused by the earth collapsing into a hole or a void.

Facts: Landslides exhibit vertical and horizontal movement down a slope, and most are triggered by heavy rain and snowmelt, earth-quakes, volcanic eruptions, and gravity.

Fiction: Landslides are generally caused by human activities such as logging, road construction, and farming on steep slopes.

Facts: Although human activities may cause landslides on unstable slopes, most landslides are caused by the natural forces or events listed previously.

Fiction: Landslides occur only on the West Coast.

Facts: In addition to the Pacific Coast; landslides also occur in most states and territories in the United States. The Appalachian Mountain region, Puerto Rico, and Hawaii are highly susceptible to landslides.



America Reaches Out – Amateur Radio Clubs to 'Ham it Up' for Troops By Rudi Williams American Forces Press Service

WASHINGTON, Feb. 16, 2005 – Ham radio operators and amateur radio clubs plan to "Ham It Up for the Troops" on May 28 during the second annual Amateur Radio Military Appreciation Day to thank active duty, veterans and retired military people for their service and sacrifices to the nation, according to ARMAD's founder and former Air Force sergeant Emery McClendon.

"ARMAD is a day when all amateur radio operators and amateur radio clubs worldwide are invited to gather at public locations to allow our citizens to express words of thanks and appreciation to our military members and coalition forces in a live format," said McClendon, who founded and established ARMAD in Fort Wayne, Ind., almost a year ago.

"The original purpose of ARMAD was to encourage amateurs worldwide to use our hobby to express thanks as a public service for those that serve in the military, including active duty, veterans and retirees," said the former aircraft refueler. "We also wanted to allow their families to support one another with words of encouragement by contacting other ARMAD locations."

Ham radio operators set up in public locations such as shopping centers, parks, Veterans Affairs hospitals and sporting events to express verbal positive support "live" over the radio for active duty military people, members of the reserve components, veterans, family members and military support groups, McClendon said.

ARMAD is associated with National Military Appreciation Month and is being held during the weekend of Memorial Day, a day of remembrance for those who have died in the nation's service.

"It was felt that to honor those that serve during this special day would be fitting as this day was already special to those who have given the ultimate sacrifice for this country," McClendon noted. "On this day, many people gather at events to pay tribute to those that have died for our freedom."



This year, amateur radio operators will participate from several states --Florida, California, Washington, Ohio, Michigan, Louisiana, Colorado, Texas, North and South Carolina and others. Operators in several foreign countries also are slated to participate, including Australia, Kuwait, Greece and England, and members of the Iraq Amateur Radio Club are expected to join in as well, according to McClendon.

"We expect many others, including ships and military hospitals, as we approach the event date," he said. "Last year, we had more than 25 different groups in the U.S. and about 15 foreign countries participating in ARMAD," McClendon noted. "We expect participation to triple for the 2005 event. We've had great response just by word of mouth. With publicity, we will grow, and reach many more troops and communities."

McClendon served four years on active duty in the Air Force, including 15 months at Clark Air Base in the Philippines, and two years in the active Indiana Air National Guard.

McClendon said he received several heartwarming comments during last year's ARMAD, which was held at Fort Wayne Memorial Stadium. Noting that local government officials read proclamations of support for the military during a small ceremony, McClendon said, "After hearing these local officials speak over the radio, some of our military members remarked that they were pleased and felt privileged that a government official would take time away from their families for such a cause."

"There were also many heartwarming comments from young children expressing thanks to our men and women for what they do to keep America free," he noted. "Many kind words were exchanged from all over the world to American and coalition troops. One man from Kuwait joined us on the air to say thanks to America for freeing his country from Saddam Hussein. His statements moved the crowd in the stadium."

McClendon emphasized that ARMAD is not affiliated with the Military Affiliate Radio System in any way, except that many MARS operators are amateur radio operators. But MARS plays an active role in ARMAD.

"ARMAD is for those that serve our great country," McClendon said. "We want to spread the word to as many military members and communities as possible so that we can help boost the morale of those that serve, in this positive manner."





NUCLEAR WEAPONS EFFECTS Nuclear EMP By Joshua (13) from Utah

[Editor's Note: A special thank you to Joshua for providing us with a number of articles explaining the effects and nature of radiation, blast, fallout and other nuclear-related topics.]

Nuclear Weapons Effects

Nuclear weapons can be exploded above the ground or at the level of the ground. Explosions in the air can be as high as 200 miles. Explosions this high do not hurt people. An explosion that touches the ground is called a ground burst. Ground bursts are used to cause a lot of radiation and make deep craters in the ground. Nuclear Weapons have the effects of blast, fire (thermal), radiation, and electro magnetic pulse (EMP). Nuclear bursts are measured in yield. One megaton is equal to one million tons of TNT exploded. This is the largest weapon we would probably ever have against a city. This is the size weapon I'm using for my report.

Electromagnetic Pulse (EMP)

High altitude nuclear explosions cause EMP. This bomb would probably be exploded at 200 miles high. It would be sent by a satellite or on a missile. One EMP explosion at 200 miles high could affect the entire United States. The EMP destroys all tiny wires. Televisions, radios, GPS satellites, telephones, cell-phones, computers, power grids and most all electrical equipment would be destroyed by this effect. Most of our means of communication and navigation would be affected. Banks could not open. Cars may not even be able to run. This would happen in less than one second.

Small battery radios with the antennae down would probably survive because you need about 12 inches of wire to pick up EMP. Engines are not affected, but many engines are run by computerized ignitions. The computerized ignitions would be affected. Old cars would not be affected.

If the power goes out, we should make some important tests to see if it was caused by an EMP weapon or if it was just a regular power outage. We should first pick up the telephone. If we have a dial tone, then an EMP did not cause the outage. If there is no dial tone, we should make a 2nd test. A small battery powered radio or a car radio should then be turned on. If there are only one or two stations working, then we should assume it was an EMP that caused the power to go out.

If we believe there has been an EMP, we should immediately go to our shelter. EMP from the explosion will not hurt people, animals or plants. It only hurts electrical equipment. A high altitude EMP would be 200 miles high. However, it could be that a missile would soon be following the EMP explosion.





Mary Fran Myers Scholarship

Mary Fran Myers was co-director of the Natural Hazards Research and Applications Information Center at the University of Colorado for 16 years until her untimely death in 2004. Reducing disaster losses, both nationally and internationally, was her life's work.

During her tenure as co-director, Mary Fran was instrumental in maintaining the Hazards Center's international reputation as a driving force in hazards research and mitigation. Her work helped to bring about a fundamental change in national and international perspectives regarding hazards and helped institute new, more farsighted, and sustainable ways of dealing with extreme environmental events.

Mary Fran was much more than her job title. She provided leadership, guidance, grace, and laughter, and established a standard of excellence that her colleagues both admired and strived to emulate. She was an innovator, a mentor, and a creative spirit who touched many lives and whose legacy has had a lasting impact on the global hazards community.

The Mary Fran Myers Scholarship

Each summer, the Hazards Center hosts an invitational Hazards Research and Applications Workshop in Boulder, Colorado. The Hazards Workshop brings together over 350 (Continued on next page)

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(The News Stand continued)

members of the hazards community who are working to alleviate the pain and loss inflicted by disasters.

One of Mary Fran's primary concerns was ensuring that representatives of all ages, professions, and communities be represented at the Hazards Workshop. Mary Fran recognized that many people and organizations who could greatly benefit from and contribute to workshop activities — including, in particular, local practitioners, students, and international professionals — were among the least likely to be able to afford the meeting.

In 2003, members of the hazards community established the Mary Fran Myers Scholarship to fulfill Mary Fran's explicit request that qualified and talented individuals receive support to attend the Hazards Workshop. The intent of the scholarship is to bring new and fresh perspectives — and otherwise unheard voices — to the workshop.

The Mary Fran Myers Scholarship provides financial support for recipients to attend and participate in the Hazards Workshop to further their research or career paths. This scholarship covers transportation, hotel accommodations, meals, and workshop registration fees.

The Mary Fran Myers Scholarship is awarded annually to at least one potential workshop participant, who is then formally invited to the workshop. Each year, the recipient or recipients are recognized at the workshop and may be asked to serve as panel discussants, where they can highlight their research or practical experiences in the hazards and disasters field.

Eligibility and Application Procedure

All hazards researchers, students, and practitioners are eligible for the Mary Fran Myers Scholarship. However, preference is given to individuals with demonstrated financial need and those who have not previously attended the Hazards Workshop.

Applicants must complete the Mary Fran Myers Scholarship 2005 Application Form, available from the Hazards Center's Web site at http:// www.colorado.edu/hazards/scholarsh ip/.

An application form can also be requested by calling the Hazards Center at (303) 492-6818 or by e-mailing Lori Peek at <u>lori.peek@</u> colorado.edu.

Four typed copies of the completed application should be mailed to:

Mary Fran Myers Scholarship c/o Lori Peek Natural Hazards Center University of Colorado 482 UCB Boulder, CO 80309-0482

Application Deadline

Applications must be received by Friday, April 15, 2005.

Special Thanks

The Mary Fran Myers Scholarship was made possible by generous contributions from numerous individual donors as well as support from the Association of State Floodplain Managers (ASFPM), the Extension Disaster Education Network (EDEN), the Public Entity Risk Institute (PERI), and the Red River, North Dakota, High School Classroom Teachers Association.

NOD NEWS RELEASE

The National Organization on Disability's Emergency Preparedness Initiative announces the public release of all materials related to the National Capital Region Conference on Emergency Preparedness for People with Disabilities. The conference was sponsored by the National Capital Region with support of the U.S. Department of Homeland Security in partnership with N.O.D.

With registration full at 400 people and late registrants regrettably having to be turned away, the first conference on Emergency Preparedness for People with Disabilities took place on September 22-24, 2004 in Arlington, VA. The popularity of the conference and the cooperative, enthusiastic spirit of participants signal how important an event this was, and the strong commitment of the participants to addressing the emergency needs of people with disabilities in the National Capital Region and beyond.

View the Virtual Binder from the NCR Conference on Emergency Preparedness for People with Disabilities: <u>www.nod.org/emergency.</u>

For more information, contact Hilary C. Styron, Program Officer at:

Emergency Preparedness Initiative National Organization on Disability Headquarters 910 16th Street, NW 6th Floor Washington, DC 20006

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