



The Guardian

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Emergency Managers Student Association

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Special points of interest:

- *Conference report*
- *Case Study: Storm King Fire*
- *Professional development*

Taking the Helm

New Officers Assume Command of IEMSA

Dr. Frank McCluskey, Provost and Executive Vice President of American Public University System (APUS), faculty advisors Chris Reynolds and Mike Kemp, and outgoing President Dan Hahn presided over the installation of the 2008-2009 officers during the International Association of Emergency Managers (IAEM) Region 12, APUS Student Chapter monthly teleconference on March 29, 2008. Dr. McCluskey shared APUS' pride in the chapter and applauded the efforts that have made it suc-

cessful in its first year. He wished the new officers luck with the coming year. Our new officers are:

- Bob Ellis, President
- Cory Mero, Vice President
- Evelio Matos, Secretary
- Dan Niederman, Treasurer

Hahn quickly transferred his presidential powers to Ellis, who indicated that the chapter has done a fantastic job in its first year and he is looking forward to forging ahead.

Silva Reminds Members of Impending Changes; Scholarship Deadline

By Brian Silva

IAEM President, Student Council

The April 2008 edition of the "Responder" includes internship opportunities, Chapter updates, introductions to our new Graduate and Undergraduate liaisons, a new position to reach out to students not affiliated with a Chapter, and much

more! Go to the IAEM Student Council section at www.iaem.com to view a copy.

The 2008 Annual Student Poster competition guidelines will be out in the next few weeks and there are some big changes! Based on last year's requests, we are sending this out much earlier to give

more time for research/preparation as well as separating the competition into two categories: undergraduate and graduate. Stay tuned for details!

Remember that the deadline for the IAEM scholarship is May 15, 2008. Go to www.iaem.com to download the application.

Plan Ahead: Teleconference Schedule Set for Monthly Meetings

It is understood that members' schedules are very busy, and no matter what times/dates are picked for the chapter's monthly teleconferences there will be inevitable conflicts for some. In an attempt to offer ample time to plan for upcoming conferences, the last Saturday of each month (unless it is a holiday weekend) has been designated as the regular chapter teleconference. It will convene at noon. The schedule for the next six months is:

- May 31st - Noon ET

- June 28th - Noon ET
- July 26th - Noon ET
- August 23rd - Noon ET
- September 27th - Noon ET

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President Shares Thoughts for Coming Year

By **Bob Ellis**

Student Chapter President

The very first thing I would like to say is **Thank You!** I sincerely appreciate the support you have shown in making me your Chapter President. And just as important is an expression of appreciation to the outgoing officers: Dan Hahn, Mike Barker, Kim Hunt, and Margi DeVoter. This Chapter is the largest student Chapter in all of Region 12 and is extremely successful in many areas—this is a direct reflection of the professionalism and effort of these outstanding individuals. Most of you will never know just how much these extraordinary students devoted themselves to this Chapter, and the efforts they went to make it successful. All of us wish them continued success as they pursue their



Bob Ellis, during his 46 day, 10,000 mile, 13 state motorcycle trip.

educations and further their careers.

I would also like to pass on some of my thoughts about the future of this Chapter, and some of the things we will be working on this next year. First is the certification process, as outlined by the IAEM CEM/AEM program. This chapter will encourage and help educate its members on the processes involved, and help fellow students as they pursue this highly regarded certification.

Professor Michael Kemp has already started some discussion on this and I invite all of you to participate.

There will also be a series of articles in future editions of *The Guardian* which will outline many of the steps involved, and how one individual is working toward achieving CEM status.

We will also work hard in continuing to advance the efforts of this Chapter in collaboration. One of the biggest benefits of this Chapter is the ability to interact with fellow students, professionals in the field, and faculty members. We will focus on efforts to extend and improve information exchange with all members of our emergency management community.

You—our members—are a criti-

cal link in this information flow. We ask all of you to post information on any conferences, exercises, lectures, meetings, etc., of which you may have knowledge. We also ask that you submit your thoughts, articles, ideas, etc., for inclusion in upcoming issues of this newsletter. Your fellow Chapter members will benefit from the information you provide.

Another area that we will be asking for your input on is curriculum. Are there additional courses within Emergency Management (EM) that you would like to see added to the APUS course list? Emergency management is an extremely wide field of study and perhaps you, the students of this university, have ideas on how the EM department could expand and improve its curriculum. We can present your input and feedback to APUS. Students have a voice, and as a Chapter we have an even stronger voice.

In closing, I ask all of you to contribute. We are all busy; most of us with full-time jobs, family, and other responsibilities that compete for our time. But if each of you devotes just a small amount of time, you will have benefited all of us. Once again, thanks for your support!

Vice President Mero Encourages Membership to Get Involved

Dear Members,

I would like to first say "Thank you" to all of the members who voted. Voting is our essential voice within our membership, along with the discussion and connections we make just by being members. As Vice President, I will support the President with Charter Membership issues and would like to invite everyone to participate in any or all topics that help shape the IEMSA Chapter. This is your student association and

by contributing any way that you can we can achieve great things within this chapter. I am looking forward to a great year! Remember this is your IEMSA!

Cory Mero
Student Chapter Vice President

“It Can Happen Here” Report Technology Featured at Virginia Conference

By Bob Ellis
Student Chapter President

Recently I attended that 2008 Virginia Emergency Management Conference. I encourage all of you to write about different conferences, training opportunities, etc. in your community. When you share these events with others it lets all of us know what's going on in our communities, and gives insight into the world of Emergency Management.

Last summer I attended the national Community Preparedness Conference, so when I saw Virginia was having a state conference I thought it might be interesting to see what types of things they found important, and how the conferences might differ. This conference was co-hosted by the Virginia Emergency Management Association (VEMA) and the Virginia Department of Emergency Management (VDEM). I contacted VEMA and explained to them that I was a student. They were kind enough to waive the conference fee as well as help with a discount at the hotel. A big thanks goes to Ms. Hui-Shan Walker who coordinated the entire event.

The theme of the conference was ***It Can Happen Here***. The first day was a "pre-conference" day devoted to Geographic Information Systems (GIS). The attendees were a mix of GIS and emergency management personnel. I found this extremely interesting as they demonstrated how important and useful a tool GIS is to emergency personnel. GIS had been mentioned in one of my EM courses, but this day really was an eye opener

for me. Several speakers illustrated how GIS can be used for all four phases of emergency management. One county discussed how they had used GIS for formulating mitigation plans as well as picking COOP sites. Another demonstrated how GIS was used to advance debris removal, while another demonstrated how GIS had been used to find some lost hikers in a wilderness area. It is amazing what technology can do for us; it's just a matter of knowing what technologies are available, and having people who can apply that technology.

The Spotsylvania County Sheriff's Department even brought their mobile command center to demonstrate how they had installed GIS into the trailer; how they integrated GIS into response; and discussed that when the trailer is deployed one GIS

technician deploys with it. Each responder is issued a radio that tracks them so they can map exactly where responders have been.

The next three days were devoted to general sessions with breakout sessions in the afternoon (two of the days). The general sessions were dedicated to lessons learned. On Wednesday we were greeted by the VEMA President, the VDEM Director and the Virginia Secretary of Public Safety. The first presenter was Max Mayfield, the former director of the National Hurricane Center. He gave an interesting presentation on the 2007 Hurricane season, discussing what projections had been and what actual storms had occurred. He was followed by Mike Umscheid, a meteorologist/forecaster for the National Weather Service out of Kansas. Mr. Please see **CONFERENCE**, Page 14



Spotsylvania County, Virginia Mobile Emergency Command Center

Case Study:

Decisions and Behavior in Wake of Fire

By Roger Anderson

Student Chapter Member

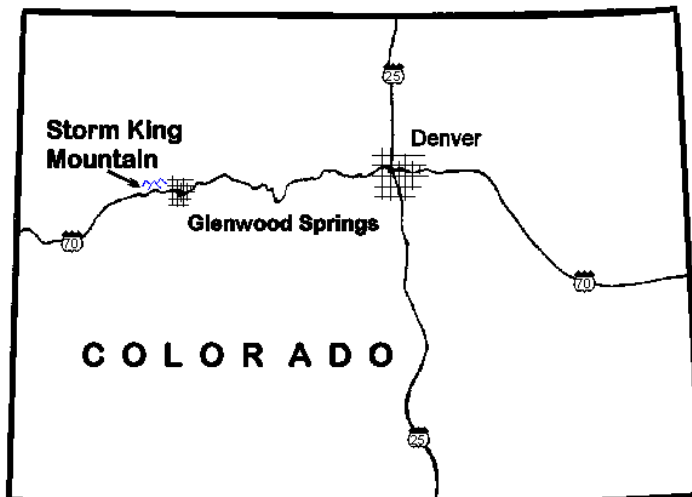
The following paper was written as a partial fulfillment of EM500: Case Analysis: Crisis and Disaster.

I. Introduction

The following research is a case analysis of the disaster at the Storm King Fire (also known as the South Canyon Fire) that occurred in July of 1994, near Glenwood Springs, Colorado. This case analysis will focus on human behaviors and the decision making process throughout the Storm King Fire disaster. But, first here's a short history on the Storm King Fire.

The Storm King Fire

On July 3, 1994, the Bureau of Land Management received a report of a fire near the base of Storm King Mountain in the South Canyon, near Glenwood Springs, Colorado.



Source: U.S. Geological Survey. (1995).

The Storm King fire started out as a routine fire. At first, it was a very small 50 acre fire. The fire wasn't growing rapidly. The fire was visible to many people as it was close to Interstate 70 and five miles from Glenwood Springs. The fire was also low on the priority list for getting firefighters. Over the next several days the Storm King Fire increased in size. The Bureau of Land Management and Forest Service dispatched hotshot crews, smokejumpers, and helicopters to contain the

fire, but with very little luck. The firefighters broke up into two crews. Most of the firefighters went below the fire to keep it from moving further towards the Interstate 70. On the afternoon of the July 6, 1994, 49 firefighters were on Storm King when the wind changed suddenly in direction gusting up to 47 miles per hour directly into the firefighters. The wind strength created a wall of flame that moved toward the firefighters at speeds up to 30 feet per second. The flames reached around 200 to 300 feet high. This fire behavior caused the fire to spot back across the drain and beneath the firefighters. The fire moved onto steep slopes into dense highly flammable Gambel oak. Within seconds, a wall of flame raced up the hill toward the firefighters on the west flank fire line. The west flank fire line is shown on Photo 1. The mountain's west slope was thus transformed into hundred foot high flames going through trees and dry grass faster than humans can run.

So for the firefighters, the fire was not only above them, but also below them. The firefighters weren't aware that the fire was about 270 feet from them because a short ridge was between them and the fire. It took only 10 to 15 seconds for the fire to reach where they were standing before they started running. A lot of the firefighters tried to run uphill, to a ridgeline, to try to escape the fire, without using their survival shelters. Some firefighters didn't make it in time, or were caught elsewhere. The fire that had started as a small, slow moving 50 acre fire just exploded into a 2,000 acre fire, killing 14 firefighters from

Colorado, Montana, Idaho, and Oregon. Inferno. (2008).

Failing to outrun the flames 12 firefighters perished. Two helitack crew members on top of the ridge also died when they tried to outrun the fire to the northwest. The remaining 35 firefighters survived by escaping out the east drainage or by seeking a safety area and deploying their fire shelters. Nix, Steve. (2008). Please locate the east drainage in Photo 1 (next page). It is

Please see **STORM KING**, Page 5

Deadly Storm King Fire Analyzed for Future Lessons

STORM KING, from Page 4

fitting to honor the firefighters that perished by listing their names. The fourteen firefighters included smokejumpers Don Mackey, Roger Roth, and James Thrash; Prineville Hot Shots John Kelso, Kathi Beck, Scott Blecha, Levi Brinkley, Bonnie Holtby, Rob Johnson, Tami Bickett, Doug Dunbar, and Terri Hagen; and helitack crew members Richard Tyler and Robert Browning. Browning and Tyler died when their escape route was cut off by a large drop and they were overrun by the approaching fire. The other firefighters were killed as they ran towards the ridgeline to escape the fire advancing from below. Several other firefighters in various other locations on the mountain became trapped by the flames but were able to make it to safe positions or deploy their emergency shelters. The fire on Bureau of Land Management's Storm King was the worst human loss in a fire season that would become the deadliest in U.S. history and the most tragic American forest fire since a 1963 Rattlesnake blaze that took 15 lives in Southern California. The Mann Gulch fire in Helena National Forest, Montana, took 13 lives in 1949. Donahue and DeClaire. (1995).

II. Hypothesis and Data to be Researched

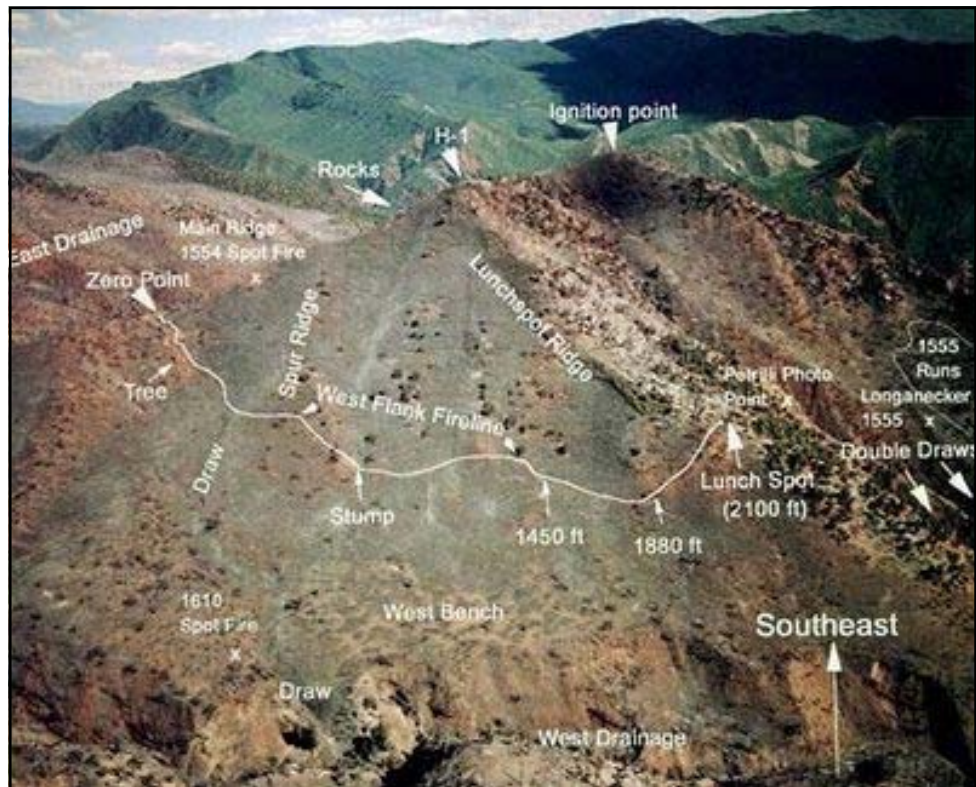
The following discussion is on the hypothesis that if the prevailing attitude of firefighter training is to learn fire behavior, fuels, weather, and tactics, then why not the lessons learned from the Storm King Fire been adhered to in teaching the psychological and sociological processes of people under stress, fear, and panic?

The data to be researched on this hypothesis will be from the following internet sites. The internet sites include information from the Glenwood Springs Post Independent, on the Storm King lessons focusing on human behavior by Dennis Webb of the Post Independent Staff. Doug Campbell and his Campbell Prediction System is related to the discussion on the Storm King Fire. Also, we learn about Solomon P. Banda, of the Associated Press, of the lessons learned from the fire line concerning how the Storm King fire helped reshape the way we fight wildfires. We review an extreme amount of comments of Ted Putnam, Ph.D., of the USDA Forest Service, Missoula Technology and Development Center, on the collapse of decision making and organizational structure on Storm King Mountain. We

Please see **STORM KING**, Page 7

Photo 1: An Overview of the Storm King Mountain Fire Disaster, July, 1994

Source: *Inferno*. (2008).



PROFESSIONAL DEVELOPMENT

Conferences

Florida 2008 Governor's Hurricane Conference, May 12-16, 2008 ~ Greater Fort Lauderdale/ Broward County Convention Center, FL

This conference will focus on the impacts of this season and the lessons learned, and it will provide attendees with the tools to prepare themselves for the next hurricane response. If you are interested please check out the conference website at: <http://www.flghc.org/>

Maryland Emergency Management Agency Director's Conference, May 27-30, 2008 ~ Ocean City, MD

This is the annual Maryland Emergency Management Agency's Conference held at the Clarion Fontainebleau in Ocean City. This year's theme is Ready-Set-Survive! For more details see their conference website at: http://www.mema.state.md.us/MEMA/content_page.jsp?TOPICID=conf

The National Conference on Security Analysis and Risk Management, May 13-15, 2008 ~ Arlington, VA

This unique conference is the only national conference that brings together the leaders, experts and practitioners in security analysis and risk management to share current developments and evolving best practices in the protection of the nation, its people, critical infrastructures, information and operations from terrorism and other man-made and natural hazards. For more details see the DHS website at: <http://guest.cvent.com/EVENTS/Info/Invitation.aspx?i=4dd2136a-c069-4ddf-9cd2-e99409f4fb03>

FEMA HigherEd Conference, June 2-5, 2008 ~ National Emergency Training Center ~ Emmitsburg, MD

The FEMA Emergency Management Institute (EMI) is hosting the 11th Annual By-Invitation Emergency Management Conference June 2-5, 2008 for representatives of colleges and universities which (1) have an existing hazard, disaster, emergency management program in place, or (2) are attempting to develop and implement a hazard, disaster, emergency management program on their campus (e.g., a degree, certifi-

cate, minor, or concentration). The conference will be held on the grounds of the Federal Emergency Management Agency's National Emergency Training Center (NETC) in Emmitsburg, Maryland – about 75 miles northwest of Washington, DC.

Professor Kemp is looking for student volunteers. Please see the post *FEMA Higher education conference attendance opportunity* under our Conferences/ Seminars/Lectures/Exercises/Events discussion board

IAEM 2008 Mid-Year Meeting, June 5-7, 2008 ~ National Emergency Training Center ~ Emmitsburg, MD.

The IAEM Mid-Year Meeting is for IAEM members, emergency management professionals, Congressional staffers and federal officials with a role in homeland security and emergency management. Sessions will include briefings from top DHS officials. The IAEM Mid-Year Meeting purpose is to advance IAEM committee work. If you are interested in participating, please register at the IAEM website: <http://www.iaem.com/>

Regional IAEM Meetings, selected dates and locations.

All of us are members of the IAEM Student Region, which is of course a global community. But we still live within one of the traditional IAEM regions. You can become active not only in this student chapter, but your regional chapter as well. For a full list of regional chapters go to the IAEM homepage (<http://www.iaem.com/index.htm>) and select Councils, then select which continent you are on (for the USA a list of regions will appear). The IAEM homepage also has a list of Regional as well as global meetings. Please check your particular region at the IAEM website for details. I encourage all of you to become active members within your region. We are hopeful that this student chapter is just the beginning of a lifelong relationship with IAEM, with you as an active participant. And if you have the opportunity to attend any of the events within your region please post your thoughts in our discussion boards, as well as sending in an article for *The Guardian*.

Research Uncovers Human Behavior Lessons

STORM KING, from Page 5

also look at the Wharton Leadership Digest on Larry Sutton's comments about leadership development on the line relating to wildland firefighters. We also consider the comments of Bill Donahue and Joan DeClaire on the tragedy of the Storm King Fire.

III. Literature Review

Researching the internet for an literature overview about the Storm King Fire and its consequences revealed a wealth of information. Experts in wildfire fighting continue to look for lessons learned from the King Storm fire. Many lessons involve human behavior rather than fire behavior. Ted Putnam, who helped investigate the fire, but refused to sign the investigative report, argued it failed to adequately address human factors behind the deaths. Also, Dick Mangan investigated the Storm King Fire, and like Putnam, refused to sign the investigative report. Mangan says the U.S. Bureau of Land Management fire managers in Grand Junction should have been held accountable for their actions in the days before the deaths. Ted Putnam now retired from the U.S. Forest Service, is encouraged to see that interest in the human factors continues to this day. Dick Mangan, president of the International Association of Wildland Fire, says academic researchers, are now focusing on human factors that is now a new and hot topic among some in academia. Webb. (2005).

The highly academic discussion is not going unnoticed by firefighting leadership. Many are recognizing that improvements in weather forecasting and safety gear isn't as important as improving thinking and decision making by firefighters and supervisors. Both Dick Mangan and Ted Putnam particularly praised a paper presented by Dr. Jennifer Thackaberry, of Purdue University's Communications Department. Thackaberry finds the federal agencies at odds with whether they manage safety as a virtue or safety as a duty. Thackaberry says some firefighters felt their orders regarding safety were hard and fast rules never to be broken. Others insisted the rules were simply guidelines for flexible decision making in the field. According to Thackaberry, a duty ethic is possible to determine objectively what is right and what is wrong before the fact. Thackaberry says, an ethic of virtue, is impossible in programming people to deploy objective rational deci-

sions moment by moment. But, Thackaberry believes it is possible to cultivate virtues in people so right decisions become a matter of habit. Webb. (2005).

Jim Cook, of the National Fire Operation Safety office, in Boise, Idaho who trains firefighters in leadership and decision making, reflects the Storm King firefighters had misgivings about the firefighting assignment, but really didn't have a procedure to articulate it. Apparently the firefighters knew it was time to turn around, but no one wanted to look weak to the others by suggesting they should step back from the flames. Patrick Withen, a smokejumper and sociologist has discussed firefighter attitudes and has pointed out that there is no way to "just say no" in firefighting that doesn't carry some formal or informal consequences. The sociological pressure is on the individual firefighter. Routinely, there is a stigma attached to leaving the fireline. Putnam. (1995). The culture was that if you said something, you were showing weakness. Getting around that attitude is now stressed in training through a new type of class developed after the Storm King deaths. The training is intended to shatter the fire line culture where no one wants to be the first to point out dangerous situations.

In June, 2005, the U.S. Forest Service created a foundational doctrine for wildland fire suppression, aimed at changing firefighter thinking to reduce the chances for future firefighting tragedies. Webb. (2005). Tom Harbour, national director of fire and aviation management for the Forest Service, reflect the increasing number of rules imposed on firefighters has reached a breaking point. The agency's new firefighting doctrine is for firefighters to focus on the intention of their commanders, including the applications of what they have learned into dealing with the current fire situation. It's not just trying to remember 47 rules that may apply in this particular situation or 32 that may apply in that situation. Webb. (2005).

Tom Harbour said the Forest Service is trying to learn from the Marine Corps and Army Special Forces, where people make critical decisions under stress. Webb. (2005). Wildland firefighters need good leadership as poor leadership can literally kill firefighters. Wildland firefighting is similar to other types of emer-

Firefighting Tactics Developed in Wake of Fire

STORM KING, from Page 7

gency management, such as structural firefighting, emergency medical services, or the military. Decisions must often be made in very compressed time frames. Results of poor decision making can be loss of life, property, or public confidence. Sutton, Larry. (2002).

Michelle Ryerson, a Storm King survivor co-authored a paper for a safety summit in which she said 70 to 80 percent of accidents are associated with human error. She and co-author Chuck Whitlock, a Forest Service retiree, noted that a system for analyzing human factors already exists elsewhere in the world of accident investigation. This model has been used primarily in aviation related accidents, and we are currently working towards implementing it for ground wildland fire accidents. Dick Mangan is happy to hear of this new direction in looking at human decision making. Webb. (2005).

According to Doug Campbell, fire tactics are successful when they are based on accurate predictions of potential fire behavior. It would result in fewer accidents if we could teach that skill to beginning firefighters. Thus, firefighters do not engage the problem until they mitigate the risk and hazard by an accepted system and procedure. By this taught method they are able to predict the outcome accurately. Campbell. (2007).

Every firefighter needs to know how the Storm King Fire, as an entrapment fire, should have been fought in order to learn how to face future situations. Doug Campbell says, one must describe the fire's potential, plus design a firefighter tactic that is safe and effective. This is the subject of Campbell Prediction System classes. The firefighters on the Storm King Fire were observing changes that indicated the situation was getting more and more dangerous. They did not disengage and give up until they got fire run out. It was then too late to avoid many being fire burned over. Doug Campbell asks if this was crew behavior habitual or behavior isolated to a few? Campbell. (2007).

We need to match the tactics to the potential of the fire and act to change the tactic as the situation unfolds, according to Doug Campbell. We need to know how to observe and communicate what this fire is telling. What is needed to prevent this kind of accident is a system that works to determine the fire behavior potential for

various situations. The Campbell Prediction System (CPS) is designed for this purpose. CPS was designed because of the failure of other training courses to provide enough solid wisdom. Firefighters need to know which areas are potentially beyond control and the areas within control. Firefighters should base their tactical action on this information. Firefighters must use some fire ground wisdom or logic, which includes information available to an observer and logical questions to ask and answer. Campbell says we must predict the changes in fire behavior using information gained at the scene. Campbell argues, develop the tactics as "fire behavior tactics" rather than "opportunity tactics." Campbell. (2007). So, make changes in tactics as the situation changes before fire runs.

According to Solomon Banda, poor tactics, miscommunication, and lack of air support all contributed to the Storm King Fire deaths. But investigators also discovered a firefighting culture that may have prevented those who died from raising objections and refusing a dangerous assignment. Investigators felt the "can do" attitude did a part in keeping firefighter at the scene. Yet 12 of 18 warning signs taught to all firefighters were either ignored or not recognized on Storm King, investigators found. Eight of 10 standards orders issued to ensure safety were not followed. The flames came so quickly that only one of the victims had time to crawl inside a fire shelter to no avail. Banda. (2004)

Have these Storm King Fire lessons truly been learned? Solomon Banda says, the results have been mixed. Four firefighters in Washington state in 2001, in circumstances similar to Storm King, the federal investigators said the Washington fire managers willfully disregarded employee safety, violated basic safety rules, and ignored or disregarded 10 of the 18 warning signs for danger. The incident commander in the Idaho fire also violated standard orders, investigators said. But at a fire near Republic, Washington, in 2001, a 20 person crew from Saguache, Colo., raised objections to an assignment deemed too dangerous. The crew was ordered into a basin filled with dead trees as a fire burned below them, which was a clear sign of danger. Others in the crew agreed, including the squad boss. The crew was assigned another task, but this action is now congratu-

Please see **STORM KING**, Page 9

Situations Dictate Decision-Making Process

STORM KING, from Page 8

lated as it recognized a potential dangerous situation. Banda. (2004).

Among the specific changes since the Storm King Fire disaster is an added emphasis on dropping tools and heavy packs when trying to escape a fire, and making a sturdier fire shelter. Fire managers are also clarifying safety and deployment zones to give crews a better chance at survival should things go bad.

Perhaps the biggest change is new training designed to avoid the same over confidence that contributed to an experienced and knowledgeable crew from turning around before the fire started its run up the mountain. Prior to the Storm King Fire, training was almost exclusively technically oriented. That was considered that to be adequate. Now the focus is on human behavior rather than focusing on fire behavior. Banda. (2004).

A review of changes made in firefighting practices was released and most of the recommendations for change after Storm King have been implemented. The report mentioned that entrapment fatalities have dropped over 40 percent since the Storm King Fire. The report said improvements are still needed, including better management oversight. Banda. (2004)

IV. Presentation of Data

According to Ted Putnam, a major extreme source of information for this research paper, says stress, fear, and panic predictably lead to the collapse of clear thinking and organizational structure. The psychological and social processes are well studied by the military and the aircraft industry (Cockpit Resource Management). Putnam says, the wildland fire community has not supported similar research for firefighters. The fatal wildland fire entrapments involve human error. Putnam says studying the human side of fatal wildland fire accidents are overdue. Putnam. (1995).

Putnam argues, wildland fire fatality investigations historically focus on external factors like fire behavior, fuels, weather, and equipment. Human and organizational failures are seldom discussed. Putnam states this is wrong because it an underlying cause of firefighter deaths as individuals have difficulty consistently making good decisions under stress. Putnam. (1995).

According to Putnam, the fire community must be-

gin determining the psychological and social levels why failures occur. The goal should not be to fix blame, but to give people a better understanding of how stress, fear, and panic combine to corrode rational thinking and how to counter this process. Putnam says progress has been made in modeling and understanding the wildland fire suppression, but too little in improving thinking, leadership, and crew interactions. Putnam. (1995).

Human thinking and decision making have been studied and modeled, as Ted Putnam reveals, the decision process is essentially adding up additives, as $A + B + C$. A decision to build a fire line may be characterized by firefighters based on their choice of adding up these factors. as fire behavior, weather, fuels, equipment, personnel, experience, skill, safety, and expectations of management. Although people are unable to use all the available information for decision making, especially when under stress. People are very good at determining the state of each factor, the inputs, but not so good in integrating all the factors to make a decision. But, on the other hand, computers process information interactively, as $A \times B \times C$, and can use most of the available information for better decisions. Putnam. (1995). Numerous studies show no matter how many factors are important, the human mind normally can handle only about seven factors, as a phone number. Firefighters differ both as to how many factors they use and the value placed on these factors. The first factor is the one the firefighter pays the most attention to and the other factors decrease in importance. Firefighter decisions can be the same, but people arrive at them through different individual evaluations. Firefighters are seldom aware of factors they are actually processing and tend to be overconfident. Putnam. (1995).

In situations that create stress, fear, and panic, Putnam says, minds revert toward simpler, more habitual thinking. This regression is saying get the work done, if weather permitting; safety first; fire behavior most important; and people and equipment dominant. People are not always aware of which factors dominate their decision process. Putnam says although firefighters say "safety first," this doesn't mean it's necessarily first in their actual decisions. Putnam. (1995).

When fire line conditions are routine, Putnam says

Please see **STORM KING**, Page 10

Communication Key to Coordinated Response

STORM KING, from Page 9

most people would reach similar decisions, because they are more aware and take more information into account. When fire line conditions worsen, decisions are more at the mercy of the one or two factors individuals are still processing. Under stressful conditions each firefighter's main factors differ, but if they readily communicate as a crew, most of the important factors are still present. Although individual decisions are additive, where good communications exist; the group decision can approach the better interactive process. Putnam. (1995).

Putnam reports human thinking tends to underestimate hazards, particularly if the hazard is increasing at an increasing rate at the fire line. An example would be estimating rates of fire spread. A computer would give the better decision in a heartbeat. People would tend to underestimate the rate of spread and have difficulty deciding on an appropriate course of action. So it is important to understand the limits of how we process information and common types of errors that can occur. Putnam. (1995).

Stress, fear, and panic take their toll at all levels of the wildland firefighting organization. Putnam says, under stress, leadership becomes more dogmatic and self-centered. It regresses toward more habituated behavior. Groups tend to fragment under stress into smaller units or to stick together and follow their leader without joining the decision making process. An extensive 12 year study of Forest Service field crews conducted by sociologist Jon Driessen showed there is an inverse correlation between crew cohesion and accident rates. The study also identified factors fostering cohesion. Driessen found it takes about 6 weeks for good crew cohesion to take affect. Putnam reflects this type of information is not normally considered even when sending crews to more risky fires. Putnam. (1995).

First, wildland fires cannot be fought without risk. Putnam says, making decisions while at risk assumes firefighters can evaluate the likelihood's of various states of nature. On larger fires, with structured incident management teams (IMT), specialists, and portable weather stations, the objective and outcomes are better predicted. In contrast, Putnam says on smaller fires, the likelihood's are more subjective, based on skill and

experience rather than instruments. When small fires grow larger and complex, such subjective estimates become less accurate, and decision making regresses to a reliance on fewer factors. The result is a failure to keep up with rapidly changing conditions and people on the fire line are put at greater risk. Putnam. (1995).

Second, Putnam says risk taking is subject to perceived actual rewards or punishments. Putnam mentions if there is a stigma associated with dropping packs and tools, firefighters will carry everything while trying to outrun a fire. When there is a stigma to deploying a fire shelter, we bias firefighters into taking more risks escaping. Apparently there was a stigma at the Storm King Fire as the firefighters took more risks to control a fire. Putnam. (1995).

V. Explanation of Data

The first collapse of decision making, according to Putnam, occurred at the BLM district level. Holding costs down and making do with local resources dominated the decision making. The tendency was to habituated tactics, as letting the fire go until a local crew is available. The district did not request additional help until July 5. The longer the initial attack was delayed, the greater the risk became. Putnam. (1995). The second collapse of decision making, according to Putnam, was about the incident commander. Putnam provides a lot of details. Although the fire started July 2, resources did not reach the fire until July 5. An incident commander (IC) from the local BLM district arrived on the fire the morning of July 5. But because of mechanical problems with their chain saws, the IC and crew left the fire that evening as a load of smokejumpers were dropped onto a nearby ridge. The first person out the door of the jumper aircraft became the jumper-in-charge (JIC). Via radio the IC turned the fire over to the JIC. This situation raises two leadership questions: Why did the IC leave the fire? Was first experienced person out the door the best way to choose the JIC? Putnam. (1995).

Putnam gave additional time report details. The jumpers fought the fire most of the night as it continued to grow in size. In response, the JIC ordered two more type I crews. The IC returned with his crew the morning of July 6. Putnam. (1995). By 10:30 a.m., a second

Please see **STORM KING**, Page 11

Many Factors Contributed to Storm King Disaster

STORM KING, from Page 10

load of jumpers arrived, and the JIC of that plane load became the line scout (LS). The IC and his crew stayed on top the ridge building fire line, while the jumpers began constructing fire line downhill on the west flank. At 12:30 p.m., 10 members of the Prineville Hotshots (PHS), including their superintendent, arrived at the fire. The IC, JIC, and PHS superintendent agreed to send 9 PHS down to help build fireline on the west flank. At 3:00 p.m., the remaining 10 PHS arrived at the fire and stayed up on top of the ridge with their superintendent to help the IC and his local crew. Putnam. (1995).

All the ingredients were in place for a catastrophe, says Putnam, as three local crews (BLM, USFS, Helitack), the Prineville crew split into two groups, jumpers from five different bases lead by two somewhat randomly selected JIC's were thrown together and asked to perform as team under increasingly unstable conditions. Neither leadership roles nor a cohesive organizational structure stabilized before the blowup. On the west flank, a group of nine smokejumpers split off to construct fire line to the southwest, forming a third group. These three groups began to focus on their own immediate problems and communications among them continued to decline. As the wind picked up after 3:00 p.m. so did fire activity and firefighter stress levels. Thus, decision making and organization collapsed inward, with fatal consequences. Putnam. (1995).

According to Putnam, from the Storm King Fire Investigation report and witness testimony, we can find signs of collapse. Leadership was questioned and challenged (for incident commander, jumper-in-charge, and line scout). Decisions were questioned. Most experienced people were not consulted and locked out of decision process. There was poor communication concerning deteriorating conditions, especially among groups, with continued fragmentation into smaller groups. There was decreased talking within groups. There was failure to integrate vital available information when changes occurred. There was failure to act on the weight of the fire evidence, including underestimating the potential fire behavior. Putnam. (1995).

Putnam says, once the blowup occurred, in the ensuing stress, fear, and panic, people's actions followed

classic lines of regressing to more habituated patterns of behavior: On the ridge top all but two people ran out the east drainage, a potential death trap. This was not a matter of thought as much as regression is going back the way you had come in. The two helitack refused to go into the east drainage and ran back along the ridge they had been dropped off on, possibly looking for a copter pickup site. The west flank SJ and PHS went back up the fireline they had been digging. Virtually all the escaping firefighters carried their tools and packs even though it cost many of them their lives. Even when yelled at to drop their tools and equipment, no one did. Even though their lives were at stake, very few firefighters made any attempt to use their fire shelters. Even though the firefighter's knew what fire shelters were and how to open them, they did not use them well, or knew where they work best. Putnam. (1995).

According to Putnam, there is a need for training to make decisions under stress. Courses such as Cockpit Resource Management train crews to counteract the natural tendencies for behavioral regression. Putnam mentions countermeasures mentioned by Weick and others to include the following. Putnam. (1995). Non-stop communication, both verbal and nonverbal is crucial, especially when people first come together. Survival goals, as to threat recognition, escape, and shelter use must be over learned through repeated practice or they will not be dominate in dangerous situations. Cross train in roles. Value wisdom and openness. Initiate respectful face-to-face encounters between crew members and between crews. Remain curious and observant. If things don't make sense, speak up. Avoid overconfidence and over cautiousness. When situations deteriorate pay more attention to leadership, perceptions, and group interactions. Strengthen ties. Group dynamics before a crisis effect survival during a crisis. Expect everyone to work safely, communicate effectively, and cooperate. Talk to other crew members and crews. Expect them to talk to you. Then listen. Be especially wary of accepting increments of worsening conditions. Putnam. (1995).

Putnam reflects it is apparent from Weick's list above and others that in order to be adequately prepared requires training, over learning, and using these

Please see **STORM KING**, Page 12

Poor Communications, Leadership Plague Fire

STORM KING, from Page 11

skills routinely before a crisis strikes. It is also clear these skills are a necessary prerequisite for effective decision making concerning integrating fire behavior, weather, fuels, equipment, and human factors.

Putnam mentions there is a start of interest within the wildland fire agencies, about the value of resource management type training and the need to pay more attention to the psychological and sociological aspects of fighting fires. Paul Gleason, a seasoned hotshot superintendent, believes that the 10 Fire Orders, 18 Watch out Situations, and 9 Downhill and Indirect Line Construction Guidelines can be information overload for the firefighter on the line. For this reason he believes four of the key factors should be constantly emphasized as to lookouts, communications, escape routes, and safety zones, as central to safe firefighting. Putnam. (1995).

VI. Do Findings Support Hypothesis

If the prevailing attitude of firefighter training is to learn fire behavior, fuels, weather, and tactics, then why not the lessons learned from the Storm King Fire been adhered too in teaching the psychological and sociological processes of people under stress, fear, and panic? When individual firefighters and support personnel are singled out, it's often to fix blame in the same way we blame fire behavior or fuels. Historically, wildland fire fatality investigations focus on external factors like fire behavior, fuels, weather, and equipment. Human and organizational failures are seldom discussed. This ignores an underlying cause of firefighter deaths is the difficulty of individuals have to consistently make good decisions under stress. Stress, fear, and panic predictably lead to the collapse of clear thinking and organizational structure. Studying the human side of fatal wildland fire accidents is overdue.

First, firefighters must maximize their resistance to decision and organizational collapse under stressful conditions. Task groups must consist of firefighters, fire training and safety officers, psychologists, sociologists, and other interested parties. Learning Task groups should develop a training program to communicate new skills to those at risk or making decisions under stress. Task groups must consist of Incident Management Teams, type I and II crews, strike team leaders, and other interested parties. Learners must determine how

firefighter crews interrelate to form an effective organization with most favorable leadership and decision making capabilities. Learners must also develop professional requirements, best skills mix, and organizational structure for fatality investigation teams and review boards. There must be IMT type teams before fatalities occur so investigation teams are trained and ready for dispatch. Putnam. (1995).

VII. Summary

In summary, it all started as just routine fire duty. When the flames were first detected on July 3, 1994, it was no big deal. It was just another 50 acres of fire. The Forest Service and Bureau of Land Management firefighting crews, began showing up on July 5, figuring their job would be easy. They were to just dig some fire lines to contain the burn and head out. However, they didn't anticipate the winds.

The disaster at Storm King Mountain was because of agency management, poor leadership, and communications. The firefighters were sent into the Storm King Mountain with no quick escape route. Firefighters did not recognize dangers of the changing fire ground situations and did not predict these variations. Apparently there was a stigma of psychological and sociological "can do" attached to the firefighters to keep them from abandoning the fire line, as the firefighters continued to take risks to control the fire. Plus, the firefighters were not warned of a cold front that was approaching Storm King, bringing with it strong winds. The Storm King fire is a lesson learned that firefighting is not a logical endeavor, but unpredictable, and can go to chaos and terror. The real issue is that we must prepare firefighters and managers to operate with maximal effectiveness under known stressful, risky conditions. The Storm King Fire investigation report clearly points out an almost automatic collapse of decision making and organizational structure.

Then why not the lessons learned from the Storm King Fire been adhered too in teaching the psychological and sociological process of people under stress, fear, and panic? Looking at the firefighter from psychological and sociological perspectives is encouraging. This idea has not been well received by many in the wildland fire community. When this idea was suggested

Please see **STORM KING**, Page 13

Storm King Fire Begg Psycho-Social Process Inquiry

STORM KING, from Page 12

to the Storm King Fire Investigation Team and the follow-up Review Board as a possible casual factor the suggestion was dropped from further consideration.

The prevailing attitude among managers is for more training and better predictions for fire behavior, fuels, weather, and tactics. They feel this training will prevent entrapments, as seen on the King Storm Fire. The Storm King Fire investigation recommendations should come as no surprise as to improve fire behavior prediction, improve weather forecasting, and develop better fuel inventories. These solutions simply fail to deal with a major cause of the fatalities, which in the end, include psychological and sociological perspectives. The Storm King Mountain firefighter decision processes degraded naturally in the end from the psychological and sociological perspectives. Both the Investigation Team and Review Board recommended creating a love for safety but did not acknowledge that this passion is determined by psychological and sociological processes. Why? The type and skill level of investigation team members and review boards typically just include IMT personnel, a fire weather forecaster, fire behaviorist, fuels specialist, equipment specialist, but no psychologist or sociologist. These investigation teams and boards, as for the Storm King Fire, just focus on the traditional inputs, which exclude the psychological and sociological perspectives. I agree with Putman and Dick Mangan, that to the future we need more attention toward the psychological and sociological processes of our wildland firefighters.

References

- Banda, Solomon P. (2002). Lessons on the line – How the Storm King fire helped reshape the way we fight wildfires, Associated Press. Retrieved 01-12-08 from <http://leadership.wharton.upenn.edu/digest/01-02.shtml>
- Campbell, Doug. (2007). The Campbell Prediction System. *The South Canyon Fire*. Retrieved 01-12-08 from <http://www.dougsfire.com/southcnyn.htm>
- Donahue, Bill and Joan DeClaire. (1995). *Tragedy at Storm King - forest fires in Colorado*. *American Forests*, Jan-Feb, 1995 . Retrieved 01-12-08 from http://findarticles.com/p/articles/mi_m1016/is_n1-2_v101/ai_16485949
- Nix, Steve. (2008). About.com: Forestry. Tragic and Destructive North American Wildfires - 1950 to Present. *South Canyon Fire Disaster - Glenwood Springs, Colorado - July, 1994*. Retrieved 01-12-08 from http://forestry.about.com/od/forestfire/ss/top_fires_na_6.htm
- Putnam, Ted. (1995). The Collapse of Decisionmaking and organizational structure on Storm King Mountain. USDA Forest Service, Missoula Technology and Development Center, February 1995. Retrieved 01-12-08 from http://www.au.af.mil/au/awc/awcgate/usda/blm_putnam_storm_king.pdf
- Sutton, Larry. (2008). Leadership Development on the Line: Wildland Firefighters. *Wharton Leadership Digest*. January, 2002, Volume 6, Number 4. Retrieved 01-11-08 from <http://leadership.wharton.upenn.edu/digest/01-02.shtml>
- Webb, Dennis. (2005). Latest Storm King lessons focus on human behavior. *Glenwood Springs Post Independent*, July 6, 2005. Post Independent Staff. Retrieved 01-12-08, from <http://news.uns.purdue.edu/Clips/2005/july/050706.StormKing.html>
- U.S. Geological Survey. (1995). Illustrations. Location Map. U. S. Department of the Interior. Retrieved 01-12-08 from <http://pubs.usgs.gov/of/1995/ofr-95-0508/fig1sue.gif>

WANTED: FIELD REPORTERS

The Guardian needs you. Have you attended a conference, seminar, or lecture, or perhaps participated in an exercise? Please submit a short article or photographs for this newsletter. Short research papers written for your classes are also welcome. Sharing with your fellow Chapter members benefits the entire group.

If you have something you would like to contribute, please contact Cheryl McCullough at trp_lee@yahoo.com or Bob Ellis at B1E1lis@hotmail.com. Please insert IEMSA in the subject line.

To Read or Write: Blogspot, Discussion Board Ready

Did you know we have our own Chapter **Blogspot**? This blog is open to current and former members, offering each access to:

- information for AMU/APUS Chapter alumni and job searches
- Executive Committee/chapter member comments
- Links to the IAEM and IAEMSA Region web sites.

The Chapter BLOGSPOT, which is only limited by your participation, can be accessed at <http://amuiemsa.blogspot.com/>. Instructions on how to use the

blog are on the front page as you open the blog. If you want to start your own blog, click on the *Request a New Message Block Here!* link, also on the front page.

Several new **discussion boards** have been created to make surfing our chapter classroom easier for everyone. Post your questions, thoughts, or ideas. If you are replying to the original message (first under that heading) please select *reply to this message*. If you have a question or reply for subsequent entries (other than the original) please select *Form a subthread*. By using these simple guidelines all threads will be easier to read and follow.

Virginia Symposium Illustrates Importance of Media

CONFERENCE, from Page 3
Umsheid gave an outstanding presentation on the series of tornado's that ravaged Kansas and totally destroyed Greensburg during May of 2007. I had taken some FEMA EMI courses on weather, but his presentation along with the graphics really brought home many of the ideas those courses had tried to teach me. Later that afternoon, we had a choice between a series of five different breakout sessions. I chose to attend a presentation on the Homeland Security Exercise and Evaluation Program (HSEEP) Corrective Action Program (CAP). I am very interested in training and education and enjoyed this discussion of the CAP and the tools that it gives state and local trainers. I followed this up by attending a presentation on a Transit Incident/Lessons Learned presented by the Fairfax County Police Department and Metro personnel.

The next morning brought a presentation by Bill Chandler, Captain of the Hennepin County Sheriff's Dive and Rescue Team and Ms. Lisa Dressler from the Minnesota Department of Emergency Preparedness

and Planning Office. Mr. Chandler gave a fantastic presentation covering the events the day the bridge collapsed as well as all of the water rescue efforts in the weeks following. Between the mix of slides, short videos and his excellent narration I came away with a whole new understanding and appreciation for what they do. The next presentation was by Bob Spiedenner, Director of Public Affairs for VDEM as he spoke about the events following the shootings at Virginia Tech. This was another outstanding presentation with insights from a PAO perspective. That afternoon I attended breakout sessions entitled Developing a Local COOP and Understanding Islamic Terrorism.

The last day was only half a day highlighted by a presentation from Mr. Matthew Shenk, the Radioroom Supervisor for Lancaster County, PA. He discussed the shootings and response at the Amish Schoolhouse in Lancaster County, PA. As can be expected, his presentation was somewhat emotional as he took us through that dreadful day and described the outstanding response. The conference concluded with VEMA handing

out some awards as well as several scholarships. This brought home the fact that each of us should check our state and local emergency management associations for possible scholarship opportunities.

There is no way that I can relate to you just how much I learned at this conference. There were so many lessons learned that brought home what our readings and faculty members have been trying to impart on us. If someone were to ask me what was the main, overarching thing I learned, I would say that relationships are the cornerstone to any emergency management program. I would also say that I learned what a big a role - both positive and negative - the media has in emergency response events. I will never take that portion of emergency management lightly, and I will work to establish those relationships that will help make me successful at whatever I do.

Once again, I highly encourage each of you to attend these types of events when you can, and please post some comments for all of us so we can learn from your experiences.

Kemp Encourages Involvement to Maintain Momentum

By Mike Kemp

Student Chapter Faculty Advisor

As many of you know, I am a co-faculty advisor for the chapter and due to the extraordinary busy schedule of Dr. Reynolds; I will oversee many of this year's administrative duties. As such, I would like to express a sincere thank you to our outgoing executive council and extend a hearty welcome to the incoming officers. The past year has been one of tremendous growth and is a testament to the effort and commitment of the chapter's leadership and membership. I thank and commend you all!

APUS is IAEM's largest student chapter and because of your involvement and achievement, it is recognized as Region 12's most esteemed. However, we cannot afford to rest on our laurels, to maintain success requires hard work and continued commitment. My challenges to all of you are to keep the momentum going, get involved, and improve! I am certain you are all up to the task and I will do everything that I can to ensure you succeed!

In closing, for the chapter to remain productive requires all of your help. I encourage all of you to voice



Faculty Advisor Mike Kemp

your opinions and lend a helping hand. Please communicate with your elected representatives and note I am always available and willing to speak with you. In advance, thank you for a great year!



IAEM Region 12 APUS Student Chapter Officers/Advisors

Bob Ellis, President

Cory Mero, Vice President

Evelio Matos, Secretary

Dan Niederman, Treasurer

Dr. Christopher Reynolds, Faculty Advisor

Mike Kemp, Faculty Advisor

To submit information for publication, contact Cheryl McCullough, Public Affairs/Liaison Committee Chair at trp_lee@yahoo.com. Please insert IEMSA in the subject line of all correspondence.

CHAPTER HELP WANTED

Rules Committee - this committee ensures the Chapter adheres to all rules, guidelines, and policies as set forth by IAEM, APUS, and our own By-laws. Interested in helping out? Contact the Rules Committee Chair, Shawn Durbin at vcems16@netscape.net.

Service Committee - this committee works on means to improving our collaboration tools, an example is our very own Blogspot. If you have computer skills and would like to help, contact the Service Committee Chair, Roger Anderson at rogera@touchva.net.

Public Affairs Committee - this committee works on all facets of internal and external communication for the Chapter. Interested in helping out? Contact the Public Affairs Committee Chair, Cheryl McCullough at trp_lee@yahoo.com.

If other committees would like to advertise for members, contact McCullough at the above address.