AIRWAVES

Newsletter of the Civil Air Patrol - Jeffco Senior Squadron

Rocky Mountain Metropolitan Airport Broomfield, Colorado Vol. 4 January/February 2011

Transitioning into a New Year

- a note from 2d Lt Luc Moens, new Editor of *Airwaves* -

As most of our members in the squadron know, Capt Tricia Sargent retired from Jeffco Squadron at the end of December 2010. Not only was she the PAO of the Squadron, but she was also the Editor of *Airwaves.* Her dedicated efforts as a writer and journalist in CAP went far beyond the Squadron level, and resulted in a significant increase in visibility of the *Airwaves* newsletter, and by extension, that of the Squadron. Since the baton has now been handed over to me, I am the new Editor for *Airwaves* starting with this first issue of 2011.

During the past year, I had the privilege of getting some mentorship from Tricia as I stepped into the unknown world of reporting at the beginning of 2010 during my first days in the Squadron. She nurtured in me a desire to learn more about this form of writing and communication, and especially to keep my eyes and ears open for anything that might be considered 'news' for the newsletter. I have a long way to go in learning my new 'journalistic' role, as well as progressing on the PAO training track. However, I have the terrific help of my PAO Teammates, 2d Lt Todd Sainer and 2d Lt Arif Gezalov (photographer).

That said, I do want to stress that *Airwaves* is *your* newsletter, and I invite you to contribute to the content in the form of written articles, pictures, comments, or simply by bringing newsworthy information to the attention of the PAO team. If all you want to do is pass on information that might be of interest to our readers, then feel free to ask us to do the writing for you. You can find our contact info in the back of this issue. Thanks for reading!

The Threat of an Electromagnetic Pulse Attack

by 2d Lt Luc Moens

"The damage level could be sufficient to be catastrophic to the Nation, and our current vulnerability invites attack" (EMP Commission Report 2004)

Many members of the Jeffco Squadron may still vividly remember the fearful moments created by the constant threat of nuclear war during the 1950s. It was a time when school children were subjected to regular 'duck and cover' drills in their classroom as part of an exercise that was imposed under a wider Civil Defense program. Although the Cold War threats have disappeared with the demise of the former Soviet Union, the world has certainly not become less dangerous. Not only is there now a nuclear threat from rogue regimes that have gotten access to nuclear weapons, but added to this is a different type of threat that could lead to equal if not greater devastation in our Nation, *i.e.,* an Electromagnetic Pulse (EMP) attack. Although it is rarely talked about in the mainstream media, it behooves an organization like Civil Air Patrol to be aware of the difficult challenges that our country would face in case of an EMP attack. To enlighten our squadron members on this type of attack and how it would negatively affect our social fabric, Lt Col Charles Sellers of the Dakota Ridge Squadron and 1st Lt James Elliott of the Boulder Squadron shared their knowledge and insights on this topic as part of the Aerospace Education program during the General Squadron Meeting held on January 20, 2011. Considering the long history of CAP in civil defense, the speakers felt that it was not only important to create awareness about the EMP threat on our national security, but also to stimulate discussion and brainstorming on how CAP members could help mitigate the impact of an EMP attack.

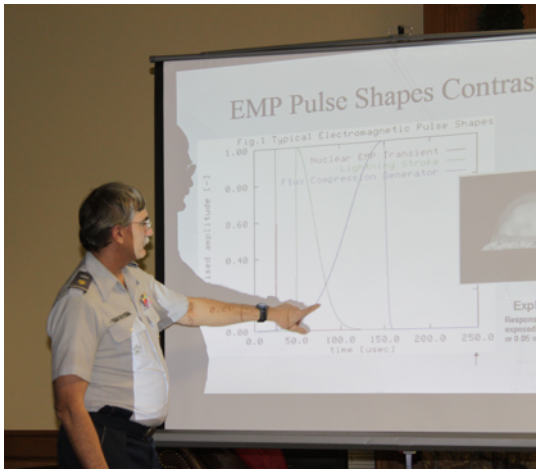
1st Lt Elliott explains EMP scenarios

Elliott, who is a professional computer programmer, first explained the concept of naturally induced electromagnetic pulses and how they impact our electrical grid system. Most of us are familiar with the most common type of EMP that is associated with solar storm cycles which occur with varying degrees of severity. In 1859, such storms affected all telegraph systems, and in 1989, they caused impressive power blackouts in Eastern Canada and the Northeastern US.

One of the challenges with an EMP event is that the Earth rotates underneath it, thus spreading out the disturbance and causing collapse of the nearby grid systems. However, as bad as these solar-induced EMP events can be, the biggest threat might come from the use of deliberate attacks involving 'electronic bombs' designed to disrupt electronic equipment. As he explained, an extreme attack involving one or two atomic bomb explosions in space would cause a

devastating EMP. A small fraction of the energy released during the explosion would be in the form of gamma rays that would collide with oxygen and nitrogen atoms in the atmosphere. This would result in a release of electrons, and the ensuing electrical current would flow through space, then through the Earth's magnetic field, and finally through the atmosphere wherein it generates microwaves. The latter cause an intense surge of power at the Earth's surface that is very short (5-10 nanoseconds) and narrow (up to 50,000V/m^2), and which would be capable of destroying anything electrical, from semiconductors in computers, up to large power transformers used throughout the electric grid system.

One can only imagine how quickly this would affect all utility and communication systems as radios, phone lines and underground power cables, including whatever electrical hardware is attached to them, would be damaged or destroyed. In turn, this would severely disrupt water purification stations and the natural gas distribution network that also rely heavily on computerized control systems. Furthermore, health care would be compromised throughout the affected area. Cars would stop running because the on-board computer systems would be destroyed, and trucks used for food transportation would be unable to serve the stores that by then would be without refrigeration.



Lt Col Sellers explains the physics of an EMP pulse.

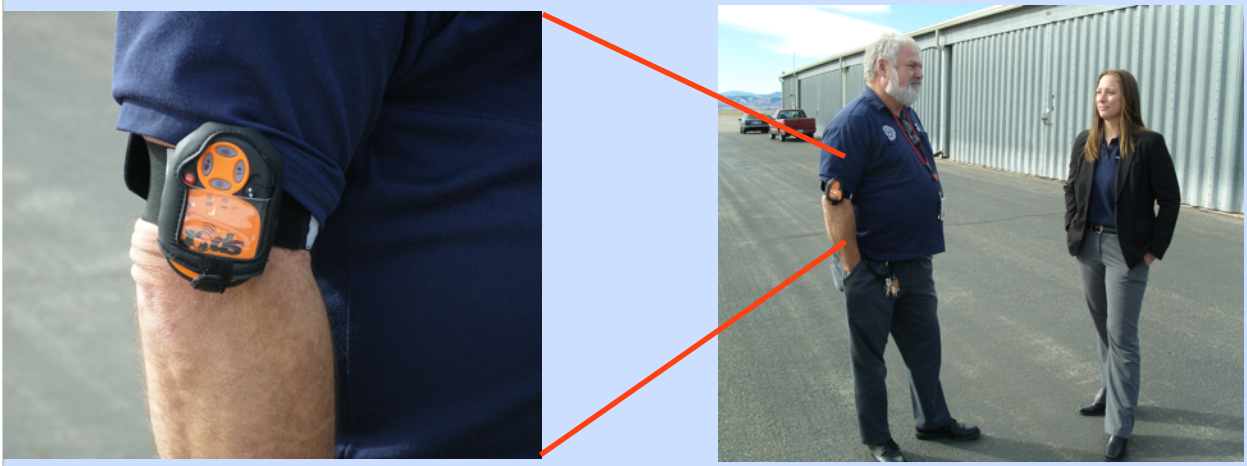
And forget about using ATM machines. As Sellers put it, it would set life back to where it was 100 years ago! Having participated in the building of an EMP-hardened military communications satellite, he pointed out that the EMP pulse would also destroy the electronics in airplanes. This would be truly catastrophic as there are normally hundreds of thousands of passengers in the air at any given time. He also brought up the disturbing observation that much of the electrical hardware used in the grids would be difficult to replace because much of the operational know-how and manufacturing base has been outsourced abroad. As a result, the demand for new heavy transformers and the like would quickly overwhelm the system at a national level.

To conclude this thought-provoking presentation, Elliott put two ideas before the attendees. First, he proposed that it would be advisable for every member of CAP to be properly trained and to have equipment to carry out water purification without power. Secondly, he wanted us to think about a scenario wherein CAP members were trained to go to specific places like a power substation, a telephone switch, water works, etc. to do specific things in the aftermath of an EMP attack. Reflecting on these two ideas, he suggested that the training of personnel would have to be carried out with instructions established in advance under a larger reconstruction strategy.

The speakers ended their presentation by referring to two excellent sources of additional information, *i.e.*, the **EMP Commission Report** (www.empcommission.org), and a book titled **"One Second After"** by William R. Forstchen.

Hey, what is Mike wearing on his arm?

by 2d Lt Luc Moens



Capt Mike Linn and Capt Jennifer Kauffman chatting after a successful exercise mission

No, Capt Mike Linn is *not* testing a new toy to measure his heart rate for when he's jogging, but rather, he is carrying a device called a 'SPOT 2 GPS', that he now wears in the aircraft during missions to constantly track his position. It communicates with a GPS satellite that transmits the GPS information to a communication satellite. The latter then downloads position points onto a website that overlays them on a Google map in real time. This map can be accessed by personnel in mission base and even by relatives. In other words, the mission crews on the ground can follow the position of the aircraft in real time, and the tracking system also avoids communication problems when the mission takes place in mountainous areas. If for some reason during a mission the mandated calls from the aircraft at the top and bottom of the hour become impossible, the SPOT system continues to send position data to mission base via satellite without triggering an unnecessary 'missing plane' search for the 'lost' mission crew. Furthermore, in case of an accident the whereabouts of a crew member who carries this device can be traced within a range of 50 ft. It even has a 911 call mechanism that can alert the authorities. Unlike an ELT that stays with the aircraft after a plane crash, the SPOT device stays with the crew member who may chose to move away from the crash site. For all these reasons, the acquisition of SPOT devices is under discussion in the Jeffco Squadron. At the very least, Mike's wife will know more precisely when he'll be home for dinner!

Emergency Alert System

by 2d Lt Luc Moens

During the Aircrew Clinic held at the Jeffco Squadron office on Feb. 5, 2011, the attendees enjoyed a special presentation by 1st Lt Leonard Ginther who took time out off his busy schedule to explain how the emergency alert system operates that ultimately leads to the activation of air and ground crews in various types of missions. Ginther is one of four Alert Officers (AO) for the COWG who carry pagers that respond to incoming calls from the authorities in case emergencies arise that require CAP assistance. These authorities can include the AFRCC or NOC, as well as calls from the Sheriff's department or even Homeland Security. As a qualified Incident Commander (IC), Ginther does the initial evaluation regarding the need for a mission, and has the responsibility to notify the COWG, and to dispatch any local resources in the event a mission is really needed. He also alerts regular ICs so that they can take immediate action. In the case of a missing plane, it is normal procedure for the AO to gather the latest weather and radar info, and to contact the local Sheriff. Quite understandably, because these alerts need a quick response within a few minutes, Ginther's duty tends to be very stressful during those initial few minutes, even more so when two or more missions need to be organized and launched simultaneously. Therefore, he made it very clear that during those busy moments he prefers to communicate *only* with a small group of people who assist him during these crucial moments. This helps him stay focused on the challenges associated with launching missions without having to deal with a deluge of distracting phone calls.

1st Lt Ginther

If assistance for a mission is needed from the Jeffco Squadron, Ginther sends out a page, whereafter an AO within the squadron contacts an aircrew based on the Alert Roster (in other squadrons, the AO would also activate a ground crew). Once the aircrew is ready, the AO contacts Ginther to get a further briefing on the mission status. Of course, it is the aircrew member's responsibility to respond immediately when called upon once his or her name appears at the top of the Alert Roster.

Ginther also discussed the two separate accidents with four fatalities that involved two small planes that crashed in the Colorado mountains in December 2010, most likely due to poor winter weather conditions. Although the investigations are still underway, the pictures of the crash site combined with additional weather and radar information provided ample food for discussion among aircrew members during the remainder of this Aircrew Clinic.

These Aircrew Clinics, which are held in the squadron office on the first Saturday of every month, represent an important part of the education of all aircrew members on topics that are not part of the regular aircrew training classes.

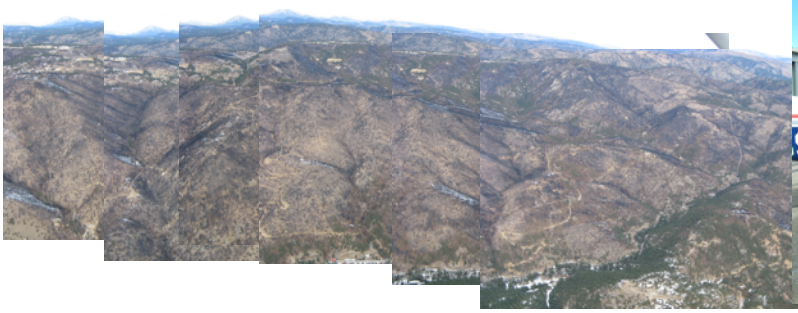
Aerial Photo Missions a Success

Mission # 11-B-4089

by 2d Lt Todd Sainer

Two aircrews, two airplanes, two missions, two sorties. Together they resulted in two sets of quality photos during the mini exercise held by the Jeffco Squadron on Saturday, January 19th at Rocky Mountain Metropolitan Airport. Utilizing the C-182s of both Jeffco and Boulder Squadrons, two crews set out to take pictures of specific targets in the Group 2 area.

CAP 594 departed with Mission Pilot Maj Brian Smiley, Mission Observer Capt Mike Linn and Mission Scanner Capt Daryl Berg to take photos of the burn area from last summer's Four Mile Canyon Fire in Boulder County. They successfully maneuvered around mountain tops to snap a series of photos to prescribed specifications as shown below.



Capt Linn -Maj Smiley
Capt Berg

Mission Pilot Capt Jason Rew, Mission Observer 2d Lt Todd Sainer and Mission Scanner Maj Victor Sabatini flew CAP 569 to the vicinity of Greeley to photograph a dam at Milton Reservoir in Weld County, and the surrounding floodplain. The practice scenario was developed as a mock FEMA-tasked mission.

Mission base was staffed by Jeffco Emergency Services Officers 1st Lt John Nordman and Lt Col John Butler, and Mission Radio Operator Capt George Thomas.

2d Lt Sainer - Maj Sabatini - Capt Rew

Congratulations George !

Anyone who has taken the training for the G-1000 glass cockpit is aware of the dedication it requires to master this system, both on the ground and in the air.

During the Squadron General Meeting of Jan 20, 2011, Capt George Thomas received a *Certificate of Achievement* for completing the G-1000 training ! *Congratulations!!!!*

Capt George Thomas

G-1000 Glass Cockpit

(We offer our sincere apologies for not having a photo of the ceremony -Ed.)

Mark Your Calendar

Aircrew Clinic: Sat, 5 Mar

Managing Land Search Operations (MLSO): 5-6 & 12-13 Mar (4 day course)

Professional Development Help Session: Thu, 17 Mar

Aircrew Clinic: Sat, 2 Apr

Wing Conference: Fri-Sun, 8-10 April

Basic Inland SAR Course (BISAR): Sat-Sun, 4-5 Jun

Evaluated SAREX: Fri-Sun, 5-7 Aug

Rocky Mountain Air Show: Fri-Sun, 26-28 Aug

Jeffco Annual Awards: Submit Nominations by 31 Mar

Airline Humor

After every flight, airline pilots fill out a form which tells mechanics about problems with the aircraft. The mechanics correct the problems, document their repairs on the form, and then pilots review the forms before the next flight. Never let it be said that maintenance crews lack a sense of humor. Here are some actual maintenance complaints submitted by pilots (marked by P) and the solutions recorded by maintenance personnel (marked with an M).

P: Left inside main tire almost needs replacement.
M: Almost replaced left inside main tire.

P: Test flight OK, except auto-land very rough.
M: Auto-land not installed on this aircraft.

P: Something loose in cockpit.
M: Something tightened in cockpit.

P: Dead bugs on windshield.
M: Live bugs back-ordered.

P: Evidence of leak on right main landing gear.
S: Evidence removed.

P: DME volume unbelievably loud.
M: DME volume set to more believable level.

P: Friction locks cause throttle levers to stick.
M: That's what they're for.

P: Suspected crack in windshield.
M: Suspect you're right.

P: Number 3 engine missing.
M: Engine found on right wing after brief search.

P: Aircraft handles funny.
M: Aircraft warned to straighten up, fly right, and be serious.

P: Target radar hums.
M: Reprogrammed target radar with lyrics.

P: Mouse in cockpit.
M: Cat installed.

P: Noise coming from under instrument panel. Sounds like a midget pounding on something with a hammer.
M: Took hammer away from midget!

Note from the Editor:

Something like this would never happen in the Jeffco Squadron for the simple reason that there are no midgets hiding in our aircrafts! Nor are there any mice... we hope!

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2d Lt Luc Moens is the Editor of *Airwaves* and is the Acting Public Affairs Officer of the Jeffco Senior Squadron. He holds a PhD degree in Organic Chemistry and is a Sr. Research Scientist at NREL in Golden, where he is actively engaged in advanced biofuel research. He is also an advanced trainee in public speaking as a member of two local clubs within the *Toastmasters International* organization. He can be contacted at lucmo@msn.com.

2d Lt Todd Sainer has been part of the Jeffco Public Affairs team for three years. He works in corporate business operations at Jeppesen's headquarters near Centennial Airport and earned his MBA degree in 2010. Todd is slowly improving his public speaking skills through his work sponsored *Toastmasters International* club, Jepp-N-Toast, which he joined last year. He also became a proud new father to baby Ryan in October, 2010. He can be contacted at tsainer@hotmail.com

2d Lt Arif Gezalov is a member of the PAO Team in the Jeffco Squadron. He was also part of two successful lifesaving missions. With his experience and focus, he takes outstanding photographs of special events, meetings, SAREXs, and Civil Air Patrol life in general. Arif is the Senior Software Engineer at Webroot Software Inc. in Boulder.

He can be contacted at arifg@comcast.net