



Missions for America

*Semper vigilans!*  
*Semper volans!*

## The Coastwatcher

Publication of the Thames River Composite Squadron  
Connecticut Wing  
Civil Air Patrol

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Issue 10.8

23 February, 201

### **CADET MEETING**

*23 February, 2016*

*Submitted by*

*C/2nd Lt Daniel Hollingsworth*

The cadets split into two groups. One group worked on their rockets and the second group planned future events.

Lt Col Rocketto briefed the cadets on possible future activities and gave the cadre a list of about 35 possible activities. The cadets will review the list, select activities, confer with Lt Col Rocketto, and choose activities to pursue.

Rocketto also praised the CyberPatriot team for the first place finish in the state and commended the robot builders for their performance last Saturday.

### **SENIOR MEETING**

16 February, 2016

*Submitted by*  
*Eugene Vidal*

Two training sessions preceded the meeting. Lt Cols Kinch and Doucette discussed the orientation procedure with new senior members. Maj Farley worked with air photographer candidates studying the nuances of the Nikon D90 camera.

Following training, Squadron Commander Lt Col deAndrade led a scheduling session.

On March 15<sup>th</sup> and 16<sup>th</sup>, 16 Canadian Air Cadets accompanied by five senior members will visit our area. TRCS has planned a range of activities for them: visits to the Coast Guard Academy and the US Navy Submarine Museum, a briefings on CAP's mission, and an evening of bowling are already scheduled. Other possibilities are visits to UConn's oceanography facilities and Survival Systems. Seniors were appointed for arranging each activity.

Lt Col deAndrade announced that the fund drive to support USCGA cadet Brendan Flynn's trip to Duale, Ecuador where he and his cohorts will work to help poverty stricken rice farmers construct a building. Brendan, a former TRCS cadet commander, sends his thanks to the Squadron.

Capt Meers reported on the weekend STEM activity building robots.

Maj Keith Neilson was assigned to arrange for repairs of the recurrent magneto fouling problem in the aircraft assigned to us.

Dates for future activities were finalized and can be found on the calendar.

## March 2016

SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8 CC CALL	9	10	11	12
13	14 Canada	15 Canada	16 Canada	17	18	19 OFlight CTWG TRAEX
20	21	22	23	24	25	26 Rifle
27 Easter	28	29	30	31		

## April 2016

SUN	MON	TUE	WED	THU	FRI	SAT
Encampment Staff deadline April 1st					1	2 STEM
3	4	5	6	7 NER AEO	8 NER AEO	9 NER AEO
10	11	12 CC CALL	13 Airport Emer Plan 0930	14	15	16 OFlight Rifle(NotCAP)
17 Week of Spring Break	18	19 No Mtg	20 SB	21 SB	22 SB	23 SQ SAREX
24	25	26	27	28	29	30 STEM

## May 2016

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10 CC CALL	11	12	13	14 CTWG TRAEX
15	16	17	18	19	20	21 OFlight Rocket Contest
22	23	24 Spring Clean	25	26	27	28 Rifle
29	30	31 FUN	Rocket Contest 21 May			

## June 2016

SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11 Rifle
12	13	14 CC CALL	15	16	17	18 OFlight
19	20	21	22	23	24	25 OFlight
26	27	28	29	31	SUI SEP 16th Groton Aviation Aug 19th	

Other Ground Tranex O-Flight Meeting Wing National

## Integrity

Date	Senior	Cadets
1	Planning - Sq staff mtg	Testing, admin, Planning (civies)
8	Commanders Call	Drill, Safety, CD, Leadership, Promo (Blue)
15	Canada Visit	Canada Troop - Special Activity (BDU)
	Visit of Canadian Cadets	
22	PD - Personnel/ES - KLN89 GPS	Fitness, Ground Team (PT)
24	OFlight	OFlight
29	Dinner 6-8 Beacon Schmidt (civ)	Drill, Rocket (BDU)

## Volunteer Service

Date	Senior	Cadets
2		STEM: Helicopter
5	Planning: Staff Mtg	Leadership, testing, rocketry (civies)
12	Commander's Call / Promotions	Drill, CD, AE, Promotions (Blues)
13	Airport Emergency Plan 0930 Rocketto/ Francisco	
16		Oflights Rifle (not a CAP event )
19		No meeting
23		SQ SAREX
26	CAP History, PAO Brief	Fitness, Safety, Rocketry, ES (BDU)
30		STEM: Flight Simulator

## Respect

Date	Senior	Cadets
3	Planning / Staff	Leadership, Testing, Admin (civies)
10	Commanders Call	Drill, Insp, Sfty, CD, Lead, Promo (Blues)
17	ES - LISP Plan, Ditching	Drill, Insp, AE, ES, DDR, Guest Speaker (BDU)
21		Commanders Cup Rocketry Contest
24	Spring Clean	Fitness, Safety, flight time (BDU)
31	Lobster Fest - Neilson	Fun night
28	CTWG Rifle Program to qualify for marksmanship ribbon	

## Excellence

Date	Senior	Cadets
7	Staff Meeting	
11		Rifle
14	Commanders Call	
21	ES	
28		

This schedule is not a replacement for good communications.

## **TRCS CYBER PATRIOT TEAM TRIUMPHS**



The TRCS CyberPatriot team consisting of Cadets Hannah, Benjamin, Daniel Ramsey, and Alec deAndrade have been declared state champions in the Silver Tier division of the Air Force Association's CyberPatriot competition.

## **TRCS ROBOT BUILDING ACTIVITY**

*27 February, 2016*

Six cadets and two senior members gathered on Saturday to work on a CAP Science, Technology, Engineering, and Mathematics (STEM) project involving the construction of robotic arms from kits supplied by the National Aerospace Education Program at Maxwell Air Force Base. Capt David Meers led the exercise assisted by Lt Col Stephen Rocketto. Examples as varied as player pianos and bomb disposal vehicles were discussed. Two questions, “what is a robot” And “what is intelligence” were examined by the participants.

Capt Meers led the group in a discussion of the difference between robots of various kinds and androids. The word “robot” was coined by the Czechoslovakian writer Karel Čapek in a 1920 play, R.U.R, the initial letters of *Rossumovi Univerzální Roboti* (Rossum's Universal Robots) which were more like androids than our present concept of robots.

Androids generally take a humanoid form and in some cases are organic. Robots are generally mechanical in appearance and are composed of non-organic material. “The Terminator” in the eponymous film is an example of an android and R2-D2 in the *Star Wars* series is an example of a robot. Some robots are computer-like such as. HAL9000 (**H**euristically **P**rogrammed **A**lgorithmic Computer) in the *2001* books and movies authored by Arthur C. Clark.

Most radio controlled models used by the hobbyists are equivalent to carpenter's tools or a pizza oven. They are designed to be operated under the direct control of an operator, craftsman, or baker.

There are several varieties of robot operating systems. The kits built by the Cadets are under the direct control of an operator and cannot operate independently. Programmable, they can be considered robots.

A second operating system is the familiar industrial robot. Industrial robots are according to an accepted definition, an automatically controlled reprogrammable multipurpose manipulator which has a maximum of six degrees of freedom (translation in the x, y, and z axes and roll, pitch and yaw. Machines such as these are used for repetitive operations, welding, hole punching, *etc.* often on assembly lines. They are limited to pre-loaded program. Autopilots, especially in helicopters are a form of industrial robot.

Then there are the semi-autonomous robots. Their control systems combine a program and an operator. A simple example is the AIM-9 Sidewinder air to air missile. It must be fired by the attacker within a restricted engagement envelope. Once in flight, its heat-seeking capabilities take over and it will self-guide to the target.

Autonomous robots are “intelligent” machines capable of performing real world tasks by themselves. Once programmed they can perform various tasks, even connecting at a docking station to recharge. One concept would allow unmanned aerial vehicles (UAV) to fly in formation with the “master UAV” commanding its wingman. A wingman in a formation of UAVs might be detached, without human intervention to fly independently and attack a target of opportunity. Two well-known examples of autonomous robots are the Mars Rovers.

The “holy grail” of robots is a heuristic robot in that can learn by experience with the environment. They might be able to repair other robots and even reproduce. Engineers are now working on the complex algorithms needed to construct such a machine.

As a prelude to assembling the robot kits, Capt Meers discussed both the “anatomy” of a robot and social issues raised by the use of robots. Meers pointed out that a robot needs a central processing unit, a power supply, environmental sensors, actuators and some sort of an output unit.

The group then discussed the social issues raised by robots. On the positive side, robots can do dangerous work without putting humans at risk, are good for repetitive task, and offer a competitive advantage to a company which uses them efficiently. On the negative side, their use can lead to unemployment of humans and an increasing dependency on technology.

Cadets were broken into two teams, Black and Yellow, names decided by the primary color of the boxes which contained the different kits. Black Team was led by C/SMSgt Hannah Ramsey supported by C/SSgt Daniel Ramsey and C/SSgt Ryan Schantz. C/MSgt Benjamin Ramsey led Team Yellow composed of C/CMSgt John Meers and Cadet Cameron Wischman.

The Cadets then shifted to the practical problem of robot construction. Using the kit plans, a scale, and a protractor, they determined the envelope in which the robot would need to move. The assembly instructions were reviewed and an inventory of parts completed.

Although kits, construction required a great deal of mechanical and electrical assembly work and trouble-shooting the sub-systems as they were assembled and checked out. Discussion among team members and experimentation were the order of the day. Eventually, each group operated a working model which could rotate around a vertical axis, extend “arms” which could bend and rotate, and seize objects with its clamping “hands.”

The Cadets then practiced using the controls to perform simple tasks such as picking up objects, stacking cubes, and loading a pallet.

The next STEM Saturday will be in April and involve the construction of a quad-copter and a radio controlled airplane.

### **TRCS ROBOT ASSEMBLY LINE**



*Reading the Instructions*



*Inventorying the Components*





*Planning the Envelope of Motion*



*Attaching an Arm*

*Preliminary Assembly*



*Testing the ARM*



*Assembling a Sub-component*

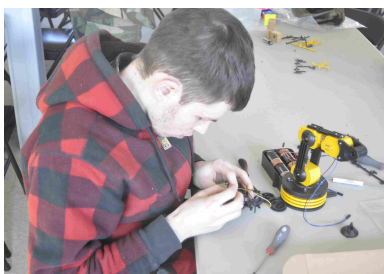
*Practicing Control*



*Discussing a Problem*



***Losing Control.  
Robot Violates  
Asimov's 1<sup>st</sup> Law  
of Robotics and  
Attacks the  
Operator***



*Wiring*

## **AEROSPACE CURRENT EVENTS**

*Sunspot Observations  
27 February, 2016*

Sunspots are dark patches on the Sun's outer shell, its photosphere. The surface temperature of the sun is around 6,000 degrees but sunspots are about

2,000 degrees cooler so they appear dark against the brilliance of the photosphere. They are temporary but recurrent phenomena, often paired with opposite magnetic polarity and have a 11 year cycle. Telescopic observations were first made by Galileo in 1610. At the present time, the sun is halfway through a sunspot cycle so the number of sunspots is at a minimum.



*McMath Solar Telescope at Kitt Peak*

On Saturday, Lt Col Rocketto set up a telescope equipped with a special filter. During their lunch break, the TRCS robotics team members had the opportunity to observe the sun and see some sunspots. A cluster of sunspots was observed near the center of the sun and another on the lower west limb.

Sunspots create fields of ions, magnetic fields, which effect the earth. The fields propagate at the speed of light and reach the earth in about eight minutes. This “solar wind” creates aurorae and can effect radio transmissions and damage electrical components, especially those in satellites.

During the late 1960s, the NASA had a number of balloon satellites in orbit: Echo I, Echo II, and PAGEOS. They were around 1500 feet in diameter and were used as reflectors for radio signals allowing for long distance communication and latitude/longitude determinations of places on the earth. But this was also a time of sun spot maximum and the the drag created by the “solar wind” could affect the orbital times of these satellites by up to 10 minutes.

There is some suspicion that sunspots affect the earth's weather. Between 1650 and 1720, sunspot activity was at a minimum for an unusually long period of time and coincided with a period of cold temperature known as the “little ice age.” Studies are being conducted to determine if the relationship is causal or merely a correlation.

As the days become longer, Lt Col Rocketto hopes to use the filtered telescope on the regular cadet meeting night and introduce more cadets to sunspot observations.

## **AEROSPACE HISTORY**

*Growing Old  
by*

*Stephen M. Rocketto*

Usually, objects in museums are artifacts of a past day. They are “old.” My attention was drawn to an article which noted that a special piece of equipment has been placed in the Smithsonian. This item was a Baker-Nunn Super Schmidt optical system and only 15 of them were ever built. Baker-Nunn No. 1 unit has been consigned to to the museum it was the one on which I had been trained in my green and salad days some 50 years ago. This led me to suspect that I was growing old.

And then the types of aircraft which I have flown now fill museums: the Cub, the Twin Beech, Airknockers, and Stearmans. But then many of these models still cruise the skies so I felt younger.

Then I thought about the airports which I once used but have “gone west.” Connecticut's Waterford, Griswold, Pachaug, Rentschler, and Johnnycake. On Long Island, Flushing and Zahn's, Fall River and Revere in Massachusetts, Rehobeth Beach in Delaware, and in the Southwest, Freeway in Arizona and Cavern City, Tubac, and Columbus in New Mexico. They will never return from the Elysian Fields where airports go when they die. I felt older again.



*The single north-south strip of Flushing Airport is in the center of the picture. LaGuardia Airport is left center. The approach to Flushing was controlled by LaGuardia Tower. It started at the south tower of the Throgs Neck Bridge, right center, and depended on identifying a building marked Western Electric on the roof and a Dog-leg shaped park!*

But then I found some of my photos of the B-1B Lancer, better known as “The Bone,” all relegated to museums. It is one of the most beautiful aircraft to fly and still are one of three legs of the USAF bomber force. I passed the photos on to our Squadron Commander, John deAndrade, a former Bone driver, and he said that his logbook shows that he flew all three of them at one time or another. Now John is in the full flower of his manhood, healthy, running marathons, and granted an Air Transport Rating. Well, supersonic aircraft which he flew are in museums so I felt young gain.

In 1995, the USAF flew two Bones around the world non-stop in 36 hours and 13 minutes, a world record which earned for all eight crewmen the McKay Trophy, awarded for the most meritorious flight of the year. What is specially interesting about the flight is that aircraft practiced bomb runs in Italy, Okinawa, and Utah before recovering at Dyess AFB in Texas. The mission required six air refuelings.

The exercise was named *Cornet Bat* and deAndrade relates that:

*I was on a backup crew for the mission, but was not used. I spend time in the Command Post monitoring the flight. Interesting note, one the two planes...developed a steady oil drop. We decided they could continue, with...the mission, finally reducing power to idle on the engine. Both planes stayed together. But lost time. Very exciting.*

Aircraft end up in museums for a number of reasons. They may be aircraft famous for specific flights such as the Curtiss NC-4 at Pensacola, first across the Atlantic, or the Winnie Mae, Lockheed Vega, at the Smithsonian in which Wiley Post and Harold Gatty set a round the world record of 8 days, 15 hours and 51 minutes.



*Charlie Blair won the Harmon Trophy when he flew his P-51C, Excalibur III, over the North Pole transiting from Norway to Alaska.*

Some were used in experimental programs that ended. The Lockheed X-15, one of which is in Washington and the other at the National Museum of the USAF.



*The XF-85 Goblin, a parasite fighter and its B-36 mothership.*



Others are prototypes used in service testing but never accepted for adoption.



*Northrop's YA-9A lost the ground attack role to the A-10 Warthog.*

And some were modified for special missions in such a way that they could never be returned to regular service.



*The NB-36A bailed to NASA by the USAF was modified to carry the X-15 rocket plane.*

Then some which are flyable are donated by aviators or their estates. These aircraft may be exhibited in static displays or flown at airshows.



Given that not only obsolete aircraft but relatively new aircraft have been consigned to museums, I felt young again.

Here are three museum aircraft flown by the relatively young and fit Lt Col deAndrade.



*83-0069 is at Warner-Robins AFB Museum of Aviation. At one point, she was assigned to the Georgia Air National Guard and has carried three names: Silent Penetrator, Rebel, and The Beast.*



*Spit Fire, 83-071 is on display at Tinker AFB. Tinker is the site of the Air Logistics Center responsible for the Integrated Battle Station modifications incorporated into the Bone.*



*The USAF Museum houses Boss Hawg, formerly known as the Lucky Lady. She was the first Bone to accumulate 2000 hours and retired after 1071 sorties and 488.2 hours on the airframe.*