Smoke Signals
November 2016

By: Your Name Could Be Here!

Next Meeting: Saturday
Nov 21st, 2016
0800 Breakfast
0900 Meeting

Guest Speaker: Denny D'Angelo on formation flying

President's Corner

What a great presentation from Evolution Trikes last month…. Larry and his crew did a great job! Give Denny a high five for setting up these great programs!

I'm asking all again who have had the EAA child protection training to email me and let me know they've completed it. I'd like to get a tally on those available for Young Eagles support/flying. We need to get the YE program off the ground next year.

Remember, we're also looking for a new YE coordinator and a newsletter editor. Please let me know if you're interested.

FROM THE BACK SEAT

The past month has been a cornucopia of flying events; there was the annual Halloween Breakfast Fly-in at Flying W, followed by the Deland Sport Aviation Showcase (sportaviationvillage.com), next was Love's Landing EAA Chapter 1236 Annual Fly In, and then this past weekend was the Winter Haven Pilot's Association Veteran's Day Fly In (held on Saturday 12 Nov 16) along with the Seaplane Pilots Association Annual Membership meeting also held at Winter Haven on 12 Nov 16. So the Florida Fly In season is in full swing and more to come. Steve Ritzi has a great newsletter on Florida flying events. His newsletter is worth getting on his mailing list. You can reach him at Steve@Ritzi.com. Steve states the next big event will be Friday, December 2 - Sunday, December 4th 2016 at the Lakeland Linder

Regional Airport (KLAL) - Lakeland, FL. IT will be Warbird Weekend 2016 & "When Pigs Fly South" BBQ Competition, so mark your calendars now.

Speaking of Steve, he was to brief us on the Reno Air Races this month, but an unexpected job requirement resulted in his having to miss this month…I am lining him up for February. I will step in with a presentation on light aircraft formation flying based on the FAA FAST curriculum. While it will not be as "high speed" a presentation as Steve's it will be fun. I have invited members of EAA Chapter 1562 to join us for a joint meeting as they are interested in formation flying. So, I expect the chapter will have a good turnout especially with the return of our Snow Bird members. Please make this meeting as it will be the last one before our Annual Awards banquet in Jan 17…more to follow in the event…as there is no meeting in Dec due to the holiday season.

So what is on the lineup for next year? We have Steve Ritzi's presentation on the Reno Air Races and the future of the unlimited class scheduled for the Feb meeting and I am working the folks form ICON to come a make a presentation on the ICON A5 seaplane in Mar 17. ICON has established a training center at the Peter O'Knight airport in Tampa, so we may visit the facility. I have great topics and speakers coming, so keep watching the newsletter for more info.

OK, one last time, please, don't forget to plan now for the Annual Awards Banquet to be held on 21 January 2017 at the Chapter Clubhouse. While we are working to find a guest speaker; we have secured the world's best steak and lobster chef, Mike Tippin, to cook for us. The meal choice will be similar to the May 16 event, steak, lobster, potato, and corn for around $10 per person. The chapter will pick up the difference in cost and provide drinks. Members are asked to bring a favorite side dish and adult beverage of their choice…just bring a little extra so we can share. Bring your family and friends…trust me it is a good time for all.

So the weather is now perfecting for getting back into flying and attending one of the local events, so don't procrastinate. Until the next meeting, don't forget to…

…keep 'em flying.

dd

EAA 175 CHAPTER MEETING MINUTES

DATE: October 22, 2016

LOCATION: Chapter House, Tampa Executive Airport (KVDF)

ATTENDANCE: 19

Business Meeting

The chapter meeting was called to order at 0915 by Jeff Kaloostian. Thanks, and recognition was given to Ralph LaBlanc and Steve Reisser for cooking breakfast this morning.

Old Business

Meeting Minutes and Treasurer's Report:

The September meeting minutes were posted to the Chapter website and sent as the Smoke Signals newsletter to the membership via email. Thank you, Gordon Knapp, for filling in as Acting Secretary in Steve Reisser's absence that month. No Treasurer's Report was available at this meeting. A motion was made and seconded to accept the meeting minutes. Without objection, the motion was accepted as published.

New Business

There are two schedule changes to mark on the calendar. Our meeting in November will be on the 19th, the 3rd not 4th Saturday due to Thanksgiving, and the Annual meeting on January 21st, 3rd Saturday will replace our regular 4th Saturday meeting.

Our annual dinner will be held at the chapter house at 1700 on January 21, 2017 instead of the 28th. Program speaker yet to be announced. Mike Tippin will be preparing a steak and lobster dinner for $10 per person. Please RSVP to Michael (N6344JT@gmail.com) and pay at the dinner.

We need new volunteers to fill the positions of Young Eagles Coordinator and Newsletter Editor. Election nominations are still open and if necessary will be rolled to 2017 with current officers retaining their responsibilities. We will have a vote at the November meeting to retain current officers and allow changes to be made as available during 2017.

Good News from EAA. As of September 19th, the Young Eagles program has provided 2,250,000 young people with the Young Eagle flights. Also, per aviation statistics this year, EAA experiment built aircraft fatalities have reduced by 18%.

Mike Z. has now taken possession of Dan Johnson son's partially completed Zenith Motor Glider and will complete the build in Lakeland.

A motion was made, seconded and accepted without objection to close the business portion of this meeting at 0940

Chapter Program

Our program today was presented by Larry Mednick, Evolution Trikes (evolutiontrikes.com). Larry fell in love with trikes at first flight and throughout his career has be devoted not only to the sales and training of trikes and weight shift pilots, but also in the design and promotion of ultralight weight shift aircraft. You can purchase the Cadillac of weight shift Sport Pilot Trikes, the Revo, for $120,000 or go for complete bliss in Larry's new fully assembled and ready to fly "Rev" for $20,000 (base price).

Larry showed the chapter several videos of the Rev. It is a single seat fully 103 compliant aircraft with amazing features. It is easily assembled and disassembled to be towed back and put in the garage. The pilot's view is incredible since there is no need for a front support bar. All you see is what's out there. For the skittish, Larry and

give you a bar to reduce any anxiety while you get used to the open sky.

Two people can set it up in 6 minutes. It is 18ft in length when folded for travel and set on a 5x7' trailer. The balance is amazing with the maximum weight required to get the UL on its trailer being only of 40lbs. The Rev has an empty weight of 300 lbs., above the 254 UL max because of it is a weight shift aircraft. Maximum gross is 600 lbs. Its 36 hp engine weighs only 45 lbs. The standard model comes with a crank (pull cable) starter but it can be ordered with an electric starter.

Larry recommends that pilots take at least 10 hours of training before flying any trike because of the differences in control and aerodynamics of a weigh shift from that of an airplane. We must learn the "pendulum point" to intuitively control the aircraft. Things are very different. Push forward on the bar to climb, pull back to descend, move the bar right to bank left and vice versa. We must unlearn our muscle memory that takes over on landings. Even though a UL does not require a pilot's license you need training to survive. Evolution Trikes training will be in the 2-seat Revo which with an instructor will cost $195 per hour.

The Rev is almost "stall-proof" as it wants to wash out instead of break on stalling the wing. Crosswind landings are similar to an Ercoupe in that you can land with as much as a 40 crab, above that-land at your own risk. The Rev can take a 35kt, 90-degree crosswind component according to Larry.

Like any UL, fuel capacity if 5 gallons but this bird only drinks 1.9 GPH. It's low and slow but so much fun. You can do some amazing things with limits on a maximum of 60 degree banks and 30-degree pitch limits. Max G for the Rev is +4 and –ZERO. Negative G forces are forbidden. For those wanting a BRS, it is a $1,600 add on. There are other add-ons but truly this bird is good and ready to fly at the base prices of $20K.

What about maintenance? The wing should be replaced every 1,500 hours, engine every 600 hours, oil and filters should be changed every 100 hours.

If you would like to see if Weight Shift is something you would like to experience, Evolution Trikes will give you a ride for $80. Give them a call at 813-810-9262 and set up an introductory flight. Check both the Evolution website (evolutiontrikes.com) and You Tube for information and videos of the Rev and the Revo.

Our program ended at 1045.

Respectfully Submitted,

Steve Reisser, Secretary

EAA 175

SAFETY TIP OF THE MONTH

Energy Management Basics

It's about establishing the right power setting, airspeed and pitch angle to obtain desired performance.

Editor's note: This is the first of a two-part series on flight energy management, describing what it is and how we can use it to enhance safety. Look for the second part in December's issue.

Herbert Raab/Vesta—Creative Commons

In my experience as a flight instructor, many civilian-trained pilots have little to no understanding of energy management (EM) concepts. I often find myself advising pilots to maintain their energy, particularly in the traffic pattern. That's because a classic accident sequence involving a pilot's failure to manage his or her energy works like this: flying too slowly and/or too low on final approach and attempting to arrest the descent by increasing pitch alone. Instead, a well-founded understanding of energy management mandates increasing power to add energy to the aircraft to prevent airspeed decay and a possible stall.

But too many responses to my encouragements about energy management take the form of "What are you talking about?" That's unfortunate, because managing energy is one of the keys to establishing and maintaining a safe flight path. With all that in mind, let's take a look at what we mean when we talk about energy management.

Definitions

Energy can be defined as the capacity for performing work, where work equals force times distance. Stated in aviation terms, work is needed to move an aircraft horizontally over a designated distance and vertically to a target altitude. To accomplish this work, two basic forms of flight energy are needed: kinetic energy (EKIN)—represented as airspeed—and potential energy, EPOT, which is one way we should think of altitude. Engine power/thrust is the initial energy source of EKIN and EPOT, and determines the continuous maneuvering capabilities of an aircraft.

Energy increases as we add power and decreases by reducing power and/or increasing drag, as described in Table 1, on the opposite page. At the same time, an important concept is that an aircraft may be considered an "energy system," with pilot-controlled EM parameters as described in Table 2. An aircraft's "energy instruments" may be thought of as the airspeed indicator for EKIN, altimeter for EPOT, vertical speed indicator (VSI) for the rates of accumulation and depletion of EPOT, manifold pressure/tachometer for engine power, and fuel gauges for the amount of chemical energy available for conversion to power by the engine.

For purposes of operating a powered aircraft, we may define EM as using flight and power controls—as measured by the energy instruments—to establish and maintain an appropriate and safe energy state for all phases of flight.

Energy Conservation

The Law of Energy Conservation, a basic tenet of physics, states that energy can neither be created nor destroyed. Instead, it changes from one form into other forms. The extent to which its form changes tells us how much of an aircraft's total energy is EPOT and EKIN for a given flight condition and time. It explains how an aircraft can convert EPOT to EKIN, or vice versa. During such a conversion, one form of energy decreases while the other increases proportionately.

A classic example is the January 2009 so-called Miracle on the Hudson, US Airways Flight 1549, during which Capt. Chesley (Sully) Sullenberger and First Officer Matt Stiles put on a well-publicized, dramatic display of EM. They converted their EPOT

of approximately 3000 feet of altitude to EKIN after bird ingestion caused failure of both engines powering their Airbus A320.

Their altitude at the time of engine failure represented a limited amount of EPOT available for conversion to EKIN. They accomplished that conversion by regulating angle of attack (AoA) and pitching the airplane appropriately. They converted EPOT to EKIN at the proper rate, i.e., they flew at the airplane's best-glide speed (VG) while descending and maneuvering for an off-airport emergency landing, maintaining appropriate final approach and touchdown airspeeds throughout.

(The Airbus A320 family's automation provides its crew with a unique airspeed that maximizes the glide ratio—distance an aircraft glides per unit of altitude loss in wings-level flight—in a given aircraft configuration. This airspeed is called the "green dot" airspeed, indicated by a small green circle on the airspeed indicator tape and depends on the aircraft being in a "clean" configuration, i.e., flaps, slats and landing gear fully retracted. At altitudes below 10,000 feet, the green dot airspeed primarily depends on aircraft weight, and typically ranges from 200 to 235 KIAS).

The tables below define and describe the various forms of energy with which pilots should be familiar. According to Airbus, "the level of energy of an aircraft is a function of the following primary flight parameters and of their rate of change (trend):

• Airspeed and speed trend;
• Altitude and vertical speed (or flight path angle);
• Aircraft configuration (i.e., drag caused by speed brakes, slats/flaps and/or landing gear); and,
• Thrust level.

One of the tasks of the pilot is to control and monitor the energy level of the aircraft (using all available cues) in order to:

• Maintain the aircraft at the appropriate energy level throughout the flight phase:
— Keep flight path, speed, thrust and configuration; or,
• Recover the aircraft from a low-energy or high-energy situation, i.e., from:
— Being too slow and/or too low; or,
— Being too fast and/or too high.

Controlling the aircraft energy level consists in continuously controlling each parameter: airspeed, thrust, configuration and flight path, and in transiently trading one parameter for another."

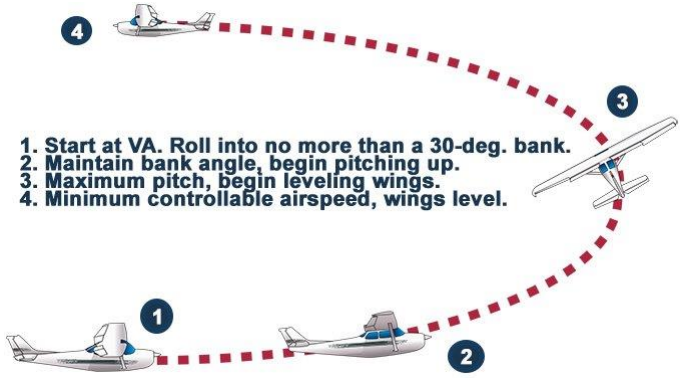
TABLE 1. KINETIC AND POTENTIAL ENERGY	TABLE 2. ENERGY MANAGEMENT (EM) PARAMETERS
• Kinetic Energy (E_{KIN}) is the product of ½ aircraft mass (m) and airspeed squared: $E_{KIN} = ½mV^2$ • Potential Energy (E_{POT}) is the product of m, gravitational acceleration (g), and height above the surface (h): $E_{POT} = mgh$ • An aircraft's net mechanical energy or energy state is the sum of E_{KIN} and E_{POT} minus drag: Energy State = (E_{KIN} + E_{POT}) – Drag	• Power: Aircraft gains energy by engine power/thrust • Kinetic Energy: Airspeed, associated with motion, can be converted to potential energy • Potential Energy: Altitude—stored energy—can be converted to kinetic energy • Drag: Aircraft loses energy from induced and parasitic drag

Energy Mismanagement

The door swings both ways, of course, and available energy can be mismanaged. In an all-engines-out scenario, mismanagement occurs when EPOT is converted to EKIN at an insufficient rate: Airspeed is reduced to less than VG as the pilot inappropriately increases AoA and pitches up too much, increasing induced drag. Doing so is an energy-depletion maneuver, which we might employ when the airplane is above its landing gear extension speed and we need to get the gear down. In extreme cases, energy mismanagement results in a precipitous decrease in EKIN, leading to exceeding critical AoA, stalling and loss of control.

Energy mismanagement also occurs when EPOT is converted to EKIN at too fast a rate. This can happen when a pilot inappropriately pitches down too much, resulting in a rapid decrease in altitude and increase in airspeed greater than VG. In this situation, limited and valuable EPOT is needlessly wasted at too rapid a rate, precious time to look for a desirable landing site is unnecessarily wasted and landing with too much EKIN (i.e., too hot on final) predisposes to losing control on the runway, or beyond it.

From these two examples, it should be clear that efficiently managing the flight energy we've accumulated depends on accurately establishing and maintaining an appropriate power setting and pitch angle. But what if efficient energy management isn't our primary consideration? What if we need to abruptly change our energy state, right now, in our normal operations? How could such a need arise, and how would we go about it?



An example of an opposite EM strategy—converting EKIN to EPOT—arises when flying a chandelle, a maneuver familiar to commercial pilots and flight instructors. The maneuver was named by French aviators in WWI who described it as *monter en chandelle* (to climb vertically).
Starting at design maneuvering speed (VA) or slower and at an appropriate entry altitude, the maneuver consists of a minimum-radius climbing turn through a 180-degree heading change, ending at an airspeed near the airplane's power-on stalling speed (VS1) and at a higher altitude. Energy is managed by appropriately increasing AoA and pitching the airplane throughout the maneuver so EKIN decreases continuously and gradually while simultaneously EPOT increases continuously and gradually.

As an energy-management exercise, it's easy to mismanage the chandelle, by increasing AoA excessively, for example, causing EKIN to be converted to EPOT at too rapid a rate during the climb. Airspeed erodes rapidly to VS1 and critical AoA can be exceeded, leading to a power-on stall.

Management Strategies

As an example of an efficient management of energy versus an inefficient one, let's concentrate on a short-field approach and landing for a moment, specifically in a Cessna 172S Skyhawk SP. The Pilots Operating Handbook (POH) says: "For a short field landing in smooth air conditions, approach at 61 KIAS with full flaps using enough power to control the glidepath. After all approach obstacles are cleared, smoothly reduce power and hold the approach speed by lowering the nose of the airplane."

In the described procedure, AoA is manipulated to convert EPOT, combined with appropriate power, to maintain EKIN at 61 KIAS while flying a stabilized approach. If AoA is increased too much, induced drag increases inappropriately, resulting in a precipitous decrease in airspeed/EKIN (energy depletion maneuver) and, thus, a decrease in lift. The airplane will drop below the glidepath.

In this low energy state, the only way to recover and recapture the desired glidepath is to add power to increase airspeed/EKIN, which then acts to increase lift and restore altitude/EPOT. The pilot must coordinate changes in AoA with appropriate changes in power to maintain airspeed/EKIN on the glidepath. When nearing the desired touchdown point, it's imperative to properly combine AoA, airspeed/EKIN and power to maintain an appropriate energy state. Touchdown should occur at minimum controllable airspeed/EKIN (i.e., any further increase in AoA or wing loading, or decrease in engine power output, results in a stall) with the airplane in a pitch attitude resulting in a power-off stall when the throttle is closed.

One example of less-efficient ways to manage energy is the chandelle, summarized above. Another is the forward slip, as may be employed when flying that very same short-field approach and landing. This time, though, we want to deplete our EPOT/altitude by increasing the rate of descent and steepening the glidepath without increasing EKIN/airspeed. Of course, we want to do all this while tracking along the runway's extended centerline. A forward slip is desired in this instance, in which the airplane is flying sideways because the longitudinal axis of the airplane is yawed at an angle to the flightpath. The rate of turn is too little for the bank angle, accomplished with opposite control inputs.

This results in the relative wind striking the side of the fuselage and lowered wing, and a marked increase in drag. It's a textbook energy depletion maneuver, and explains how an airplane in a slip can descend rapidly without increasing EKIN/airspeed. Energy is managed by regulating AoA to appropriately pitch the airplane to convert EPOT to EKIN to maintain desired airspeed (for example, 1.3 VSO), bank angle to control the rate of descent, and rudder to maintain heading and yaw the airplane's longitudinal axis.

Energy management concepts are interwoven in aerobatic flight, soaring and air combat (above). For example, at the beginning/bottom of flying an inside loop EKIN/airspeed is highest and EPOT/altitude is lowest. By appropriately increasing AoA and pulling up into the loop, EKIN decreases gradually while simultaneously EPOT increases gradually. EKIN at the bottom of the loop is converted to EPOT at the top of the loop. As the airplane “floats” over the top, EKIN is lowest and EPOT is highest. As the airplane completes the second half of the loop, EKIN increases gradually and EPOT decreases gradually back to their original values. The EPOT gained at the top of the loop is reconverted back to EKIN at the bottom.

Concepts and Training

A foundational understanding of energy management really hasn’t been sufficiently emphasized in civilian pilot training programs in the United States. Fortunately, this is about to change. The new private pilot airman certification standards (ACS) that went into effect last summer require applicants to demonstrate EM understanding in 10 areas of normal flight operations, including short- and soft-fields, forward slips to a landing; go-arounds/rejected landings; steep turns; and emergency descents, approaches and landings.

The EM-centered approach to flying I’ve tried to present here helps pilots focus on the fact we’re all really energy managers when it comes to flight, who monitor and manage the aircraft’s energy state to obtain desired performance. If some of these concepts prove difficult, EM training from an experienced flight instructor can help.

In my view, EM is one of a pilot’s most important tasks, from takeoff to landing, because without energy, a pilot has nothing. Next month in this space we’ll explore what I mean, as we tackle EM’s relationship to loss-of-control accidents.

See:
http://www.aviationsafetymagazine.com/issues/36_11/features/Energy-Management-Basics_11260-1.html

INTERESTING NOTAMS

1. Did you know?

   a. The first female member of a Chinese military demonstration team died in in an unrelated accident on Sunday, . Yu Xu was unable to eject from the J-10 fighter she and another pilot were flying. The other pilot could get out but was injured in the ejection. The mishap was the latest in a string of at least five J-10 crashes in the past two years. Yu was one of 16 women in the Chinese military's first intake of female fighter pilot trainees in 2005. She was one of four females qualified on the J-10, a single-engine jet that looks a lot like an F-16. A few weeks ago, Yu performed as part of the August 1st aerobatics team, which flies J-10s, at the Zhuhai Air Show. The team is named for the founding date of the People's Liberation Army and is based at Yangcun Air Force Base near Tianjin. "The morale of the aerobatics team will be hit. There has not been an incident like this for the team for a long time," Macau military analyst Anthony Wong Dong told the South China Morning Post. There were no details released on the accident.

Yu Xu (Picture courtesy: People's Daily, China@PDChina/Twitter)

2. Don't forget to take some of the AOPA online courses occasionally…. keep those flying skills in check!

   a. https://www.aopa.org/training-and-safety/online-learning

3. From Love's Landing, Chapter 1236 Fly in 5 Nov 16 :

CHAPTER 175 PRESENT AIRCRAFT BUILDERS

1. Jack Poff
   217-821-2868
   Vans RV-9A

(Example only)

2. Mike Tippin
   813-404-0075
   Van RV-10

(Example only)

3. Ronald LeBlanc
   (813) 957-4193
   Zenith CH 750, Cruzer builder

(Example only)

4. Don Hughes; (813)598-2030; Midget Mustang

(Example only)

** If I missed you, please email me with your information…one good picture is worth a thousand words!

5. **Rich Ilfeld; (813) 645-3786**; Tripacer@ Manatee, Sail project, motor project, osprey project

Tripacer:

Sailboat

Motor Project:

Osprey:

Continuing from Rich….below:

a. Here's what I have sorted so far:

   i. AN Bolts: 3-4, 4-5, 5-10, 6-20 thru 3-11, 4-56, 5-60, 6-60

   ii. no fewer than 8 of each when considered in groups of 3/16, ie 4-16, 4-17, 4-18 is a group.

   iii. AN stop nuts, nylon inserts, AN stop nuts, Metal, AN castle nuts High and low profile, and AN plain nuts in all sizes

   iv. AN machine bolts, 8, & 10 - 32 lengths 4 through about 60

   v. AN machine nuts nylock mostly

   vi. A good variety of plain and lock washers

   vii. [if you need a few nuts, bolts, washers it's probably available -- that's the majority of the collection]

   viii. A lot of standard rivets, and blind rivet nuts and many sizes.

   ix. Some Cherry and blind rivets (not pop rivets)

   x. Several specialty bolts such as hex head or close tolerance

   xi. An assortment of camlocks and camlock parts.

   xii. Some pitot static fittings

   xiii. A Huge assortment of ear nuts

   xiv. An assortment of small 12 V lamps

   xv. An assortment of flying wire hardware

   xvi. A large variety of specialty fittings like blind latches, post lights, etc.

   xvii. Assorted clecos and more

xviii. There is a lot of stuff I haven't even gone through it yet. As I mentioned, I had a similar collection of my own and

b. So here's the deal; My position is that over the years I probably spent 3-4 hundred dollars on assortments and parts bags at flymarkets, and the donors to EAA have done at least that, plus tools. I've used parts over the years that would have been several thousand dollars at retail. And I've used a fair number of parts in the shop just because I had them. I see no reason the chapters would want to try to limit folks to using the parts on an airplane. It's not a sin to put an AN part on a lawn mower.

    i. **I will take email requests from members for parts for their projects or airplanes. I prefer email to phone, but if you are in the middle of something and need a part now- I won't hang up.**

c. Visitors are welcome at the shop, of course. And the parts are much better organized for browsing that they were before.

CHAPTER 175 OFFICERS

President

Jeff Kaloostian

813-770-9372

jkaloostia@earthlink.net

Vice President

Denny D'Angelo

813-390-2106

Eaa48@aol.com

Treasurer

Dave Presnell

(813) 690-0591

dave.presnell@gmail.com

Chairman of Public Relations

Denny D'Angelo

813-390-2106

eaa48@aol.com

Secretary

Steve Reisser

813- 482-1308

stevereisser@yahoo.com

Membership

Mike Tippin

(813) 404-0075

n634jt@gmail.com

Chairman of Sun'n Fun Kitchen

Rich Denton

813-785-6919

STUNTRV8@aol.com

Newsletter Editor: Your Name?!

BOARD MEMBERS

Jeff Kaloostian

Denny D'Angelo

Mike Tippin

Steve Reisser

Dave Presnell

Bud Yerly

Don Miller

Rich Ilfeld