Houston, You Have a Problem

An Insider's View of Flying Fighter Aircraft and Working For NASA

Prologue

There is an old Chinese proverb, “May you live in interesting times”. Based on this proverb, my life has been blessed. I have no regrets. I spent the first half of my life making myself into an astronaut, or at least what I thought an astronaut should be. This meant a degree in engineering, fighter pilot, and test pilot. I didn’t make it to test pilot or astronaut, but did make it to become a fighter pilot and then an astronaut instructor.

This is a draft. It has not been edited and is full or typos, spelling and grammar errors. Please email me at dannydeger@hotmail.com if you find an error. My future editor wanted me to keep in the names, but if you want me to remove your name, please email me and I will. This draft is free to all and small enough to email. Please forward to anyone you know and put it on your server for others to get to. My goal is to let people know about a problem in the workforce caused by workplace bullies. I hope someday the word will get out and workplace bullies will not be able to hide behind a management system and a set of regulations that are biased to support the bully boss.

Danny Deger

P.S. I don’t believe in black helicopters, I don’t wear a tinfoil hat to keep out the government thought control rays, I believe terrorists brought down the towers, and I believe NASA went to the moon. But I do believe in work place bullies and so does the Whitehouse committee that officially found the NASA IG to be a bully boss.

Guns, Guns, Guns

I couldn't believe it. Captain John "Lips" Fraley had just turned his F-4E Phantom II in front of me and gave me his six o'clock position – the tail of his aircraft. Santa Claus had come early and had given me the best present ever. As Lips had briefed, we had started off with him having the offensive advantage and in two turns I had made it a neutral fight. I was headed straight for him, we were about to pass beak-to-beak. I was preparing for a successful separation – unload, full afterburner, maybe a couple of check turns to add a few degrees of angle without bleeding off my own speed. Doing a good separation was about as easy as it gets in this business. And, just getting away without getting shot was going to piss Lips off – after all he had the advantage at the start.

Before the merge he turns hard right. Big mistake Lips -- big, big mistake. I am going to make him pay with his life. I pull hard left and get behind him. I am lined up for a heat missile. "Fox 2", I call.

Lips was flailing around. He continued turning desperately to his right. I followed. Time for another heater, "Fox 2", I called again. By the rules of engagement I had a valid kill and could call "knock it off", but I am having way too much fun. I have the advantage -- I want a guns kill.

Lips was about out of airspeed and ideas. I slide into the saddle. I have a radar lock; my gun sight was active and accurate. Pull some more on the stick and a little bit of right rudder to move the pipper to the middle of his cockpit and hold it for a second or two. Now pull the trigger, "Guns, Guns, Guns. Tracking, Tracking, Tracking. Eagle flight knock-it off."

All the trigger did was turn on the gun camera and film the event. In real combat, 20 millimeter cannon projectiles would have come out of the M-61A Vulcan cannon in the nose of my F-4E at the rate of 100 rounds a second. Each projectile has the explosive destruction of half a hand grenade and bit of incendiary to make sure what is left catches on fire. The cockpit under my pipper that contained Captain John "Lips" Fraley and his Weapon Systems Officer, WSO, would simply have ceased to exist.

After we landed, I couldn't wait for the debrief. Usually the fight is close and the lead can win the fight in the debrief. After all he is running the show and can say what he wants. But I knew Lips was toast with this one. Two valid heaters and a stable guns tracking solution was too much to turn around by "spin" in the debriefing room. I stopped by the beer machine and got two cold Buds. This was going to be a two beer debrief and I was going to love every minute. I was wrong. I met a furious and humiliated Lips in the hall. "This debrief is over," he fumed.

"But why? Don't you want to know what you did wrong? You turned in front of me!"

"I didn't turn in front of you I led turned you."

I was starting to realize what had happened. Lips was obsessed that I was going to separate from a fight that he started out offensive. His mind melted and he couldn't tell the difference between turning in front of an opponent and a lead turn for a kill. His ego was so hurt by my upcoming separation, he made a mistake – a big mistake. This goes to show you

the first rule of air-to-air combat. You aren't fighting another airplane, you are fighting another human. Get into their head and make them screw up. It is much easier to win this way than with a few angles here and a few angles there.

I didn't get the satisfaction of sipping two beers in a long debrief where we went through the fight one step at a time. Lips stomped off without having a clue what his mistake was -- his loss.

I went to the squadron bar and sat down to gloat. I was proud of myself. I didn't tell a soul I had just guns tracked the famous Captain Lips. I knew the Weapon System Officers, WSO's, would get the word out. I must say I really enjoyed those two cold Buds.

This was the turning point in my Air Force career. I had just caught the highly respected John "Lips" Fraley with his pants down and guns tracked him. I had only one other guns tracking solution in my career, but that was against a new pilot. "Lips" was a four ship flight lead and one cocky fighter pilot.

Before this flight, a comedy of errors had come my way and I had some bad air-to-air rides. I had a bad reputation in the squadron about my performance in air-to-air combat. I was even starting to doubt my own ability. This in spite of me knowing what went wrong in the earlier flights. This in spite of comments by my F-4 instructor at Homestead Air Force Base that I "had a great intuition on how to solve the geometry of air-to-air combat." There was no looking back from this flight. From here on there was no place but up. My confidence was back, I was ready to kick ass and take names.

My love of flying all started out with the early space program. I was born in 1956. Alan Sheppard flew the first Mercury flight in 1961 and John Glen orbited the Earth in 1962. I was 6 years old. I recall very clearly my sixth birthday. I was one of many guests on the Astronaut Bob show in Amarillo Texas. Astronaut Bob had a ride we all sat in that made us think we were going into space. It vibrated, rocked and rolled, and made a lot of noise. As I left the ride he asked me what I wanted to do when I grew up. I told him without hesitation, "I want to be an astronaut." I came close, I became an astronaut instructor. I have no regrets. It has been a great ride so far.

I looked into what it took to be an astronaut. All astronauts were test pilots. All test pilots were engineers and fighter pilots. First, I had to become an engineer, then a fighter pilot, then a test pilot, then an astronaut. I had my work cut out for me. Fortunately, I was born with a brain that finds the engineering disciplines easy. I have a Masters in Aerospace Engineering with straight A's. I can honestly say I didn't have to study much. I did my homework – all of my homework. But, when it came time for tests I only had to scan the book briefly as a quick review. Then it was off to a country and western dance hall to chase women and drink beer. I had a roommate in college that was in a lot of my classes. He struggled to make Bs and Cs. It used to really upset him when I came in at 3:00am and he was still studying and I would always ace the test the next day.

Life On a Cattle Ranch

Even though I am blessed with a mind that finds engineering as easy as falling off a log, I have a good work ethic. I got this from my grandfather, Jess. I called him Granddad. Granddad had a cattle ranch and was a self made man. He started his ranching business during the Great Depression and in the Eastern Panhandle of Texas. This was the heart of the dust bowl. While most people were going bankrupt and leaving, he learned to make a profit. The trick he told me is to not spend money on yourself and don't give up. Not only did he make a profit in cattle ranching, he owned a grocery store, cut hair, and owned half of the cattle sales barn in Wellington, Texas.

I didn't live on the ranch full time, but I spent a lot of time there. I lived in Amarillo, Texas which was about 90 miles from the ranch. I spent weeks at a time in the summer, many weekends during the school year, and almost all of my holidays. Not full time, but enough to learn how to raise cattle, a little cotton, and some hay.

The land around the ranch was beautiful in its own way. Every now and then it would be green. Most of the time the land was brown, but somehow brown grass grows enough to feed the cattle. There are no mountains and not really any hills. Millions of years ago the land in this area was perfectly flat. It still is perfectly flat for most of the drive east out of Amarillo. A few miles before the getting to the ranch land, the valleys start. This makes up the terrain of this part of the world. Flat some places and shallow valleys other places. Some places you get on top of a high spot and you can see forever and ever.

The natural vegetation is scrub mesquite trees. Mesquite is the sworn enemy of the rancher and farmer. I used to spend hours killing these pests before they could take over the place. Now these trees are gaining popularity. People pay a good price for a good hunting lease, and scrub mesquite is good hunting land. There is still grass between the trees, so cattle can be grazed along with the deer and turkeys.

There are also rattle snakes everywhere. Every rancher carries a gun to kill every snake he sees. One day I was opening and closing the gate as we were cutting the calves from their mothers. We noticed the cattle didn't want to come to the gate. It was really hard to cut the cattle because of this. The cattle were smarter than we were. I heard a noise like grass rustling in the wind. I looked around and didn't see anything. We kept cutting the cattle as best we could. I heard the noise again. This time I looked down. At my feet was a big rattle snake all coiled up and ready to strike.

I can't say my athletic skills are all that great, but I think I sat the world record for the standing broad jump. At least I tried my best. A quick trip to the pickup truck to get the shotgun and we were eating fried rattle snake for dinner that night.

Pilot Training

Pilot training was not a long trip for me. I went to Texas Tech in Lubbock for 2 years, then the University of Texas in Austin for 3 years to get my Bachelors and Masters in Aerospace Engineering, then the Air Force sent me to Reese Air Force Base in Lubbock Texas for a year of pilot training.

I came into pilot training saying y'all and "fixin' to". I still say y'all and have noticed it used on national TV – especially on stage at comedy clubs -- "How are ya'll doing!!" But I have dropped fixin' to unless talking to my family.

I entered pilot training and didn't know that a person who was going to end up as a very good friend was appalled with my language. I had an accent and he couldn't get over an Air Force officer saying fixin' to. He was from Boston, went to MIT and was a very proud member of Mensa. After hearing me speak for about 10 seconds he came to the conclusion I was one step above mentally retarded and the Air Force had made a grave mistake in thinking I could ever learn to be a fighter pilot. He was in for a surprise. There was a lot to learn in pilot training and the Air Force had it broken up into many parts. Each part had a test and the test scores were published. I made 100% on the first test, then the next, then the next. My Mensa friend became confused. How can a hick that spoke with an accent and said "y'all" and "fixin' to" make better scores on tests than he did? Later when we became friends he confessed to me what he thought of me when we first met. We had a few laughs over a few beers on the difference between education, culture, and intelligence.

Pilot training was a good year. I already had my private pilot license and even owned a small airplane by this time. I kept my plane at a small airport close to Reese Air Force Base and took some of my fellow Air Force students for rides. There was a major contrast in flying between the Air Force and my little putt-putt airplane. My plane was a Piper Vagabond. It was built right after World War II. Like many airplanes of that day it was really, really simple. It had no electrical system other than the ignition system to make sparks. This means no radios and no starter motor. When my fellow Air Force student pilots took a ride in this little plane, without exception they were amazed. Air Force flying has many more rules and much more control. Everything is done with permission from someone else. First there is ground control to taxi, then the tower to takeoff, then approach control, etc, etc, etc.

Without exception I was asked, "Where is the radio?"

"There isn't one," I would reply.

"But how do you get permission to takeoff?"

"You don't."

"How do you make sure you don't hit anyone?"

"Same way as your car, you look out the window."

The Vagabond was even simpler than most planes of its day. The Piper Company was loosing money after World War II. They were making lots of Cubs, but not much money. The story is a business man came in and designed the Vagabond. The point was to reduce production costs. It only had controls for one pilot, it had no suspension system in the gear, its wing was smaller and cheaper to build than the cub, and the fuselage was shorter. Everywhere they could make it, the Vagabond was cheaper to build than the Cub. It must have worked, because Piper didn't go bankrupt.

The Air Force didn't teach me to fly, the Boy Scouts did. While working at a small drive-in restaurant in Amarillo, I started looking for cheap flying lessons. I was already an active scouter and I found an Explorer post sponsored by a small flying club that owed a

Cessna 150. The plane was cheap, the ground school was free, and the instructor donated his time.

The home base of the flying club was Tradewinds Airport in Amarillo, Texas. Tradewinds was a small, uncontrolled airport. On my 3rd lesson, my instructor decided to teach me how to operate in controlled airspace – we went to Amarillo International airport for a landing. I was really nervous about this. I had never talked to a controller on the radio before. I was afraid I would say something to embarrass myself or even worse, to get myself in trouble.

I did stumble at bit talking to the controller, but my instructor was right there to help me over the rough spots. I asked for a touch and go landing on runway 04 and the controller told me to line up on final for a straight in approach. I did this and about a mile out I was cleared to land. The runway at Amarillo is huge. It is 13,500 feet long and 300 feet wide. It is this big because Amarillo International had been a B-52 and KC-135 base for the Air Force. It felt kind of strange to be landing our little Cessna 150 on such a long runway.

After touchdown, I raised the flaps, turned off the carburetor heat, and advanced the throttle all the way forward. Immediately after take off I noticed a 727 was headed straight for us. My heart rate just about doubled. It wasn't close enough to be an immediate threat, but if I continued going strait ahead and he did also, we would collide in the not too distant future. I got on the radio and stumbled over a few words to get permission to change my heading to avoid the impending collision. The controller didn't understand my request and asked me to state my request again. I was starting to get more scared – the 727 was getting closer. I asked for permission to turn again. This time my request must have been coherent because the controller granted my request.

The immediate danger of hitting a 727 was over, but I was certain what happened must have been my fault. I was now afraid of what the FAA might do to me and the instructor for what I was certain was my error – after all I was a 15 year old student pilot and the 727 was certainly being flown by a very experienced pilot. My fear was removed when I heard the controller ask the pilot of the 727 to contact him by phone after he landed. I knew then he was at fault and I was off the hook.

As we were headed back to Tradewinds, my instructor taught me a great lesson. This was the rule that states a pilot can deviate from his clearance or even the regulations if he needs to for safety of flight. In my case of seeing a 727 headed toward me, I should have turned first then told the controller I had turned. This was a great lesson for me that I have never forgotten – aviate, then navigate, then communicate!!

I got my pilots license just a little bit after I got my drivers license. While I was in college, my mom loaned me the $3,500 to buy my little Vagabond. I used it as a great first date. Nothing like "Do you want to go flying?" to break the ice with a babe you just met. I needed all the help I could get. I am only 5' 7" and not a great talker with the women.

One day I was taking a lady out to fly for the first time in her life. I could tell she was a little nervous. Did I say a little nervous? I meant a lot nervous. She asked in a voice that was close to cracking, "Where did you learn to fly?"

"The Boy Scouts," I answered with a grin. I knew it wasn't the answer she wanted, but it was too late. She was committed; we were already driving out to the plane.

One of my first experiences with an arrogant pilot was with the flying club at the University of Texas -- UT. As a junior, I was the president of the club and was checked out in the Cessna 150 we owned. During my senior year, a previous member came back into the club. Somehow when I first met him the topic of taildraggers came up. I asked, "Have you ever flown a taildragger?"

"Have I ever flown a taildragger? What do you mean? I have 6,000 hours and most of it in twin Beeches and DC-3s. How can you ask if I have ever flown a taildragger?" I thought his response was strange and rude; after all I had never met the guy before. How was I to know?

Then he decided to declare everyone in the club disqualified to fly until he checked them out. I pointed out to the club advisor, an Air Force major, that he was not an instructor and I had more recent time in a Cessna 150 than he did. If anything I should check him out in the plane. The advisor allowed him to force everyone to fly with him. The day of my check ride came. First there was over an hour of questions before we went to the plane. I answered them all. Then the flight started. Normally a checkout flight lasts a little less than hour. Mine lasted almost 2 hours. It became obvious pretty soon that his goal was to flunk me. My guess he was jealous because I had a 4.0 GPA in one of the hardest curriculums in the university. What ever it was, this guy had a chip on his shoulder.

I would not be flunked. I flew well. Finally he said, "OK, let's do a short field landing to a full stop." I did the best short field to a full stop I had ever done. Full flaps, keep the speed slow, full stall landing on the numbers, and heavy braking. It can't be done better than the one I showed him. "Was that OK," I asked with a smile?

"Yea," he responded. He didn't look happy. It was obvious that he was very disappointed that he couldn't flunk me.

I approached our advisor once again and pointed out that this arrogant pilot was taking almost 2 hours of flying time to check people out. We were poor college students and couldn't afford the flight time to get checked out in a plane we were already checked out in. He agreed and cancelled the rest of the checkouts.

It turns out I went into pilot training with him. It didn't last long. He didn't even pass his first check ride in the Air Force. Word got out that he thought he already knew how to fly and didn't need to learn anything from the Air Force. After all, he had thousands of hours as a commercial pilot in many different airplanes. I can't say I cried in my beer when I found out he had washed out.

Fortunately, I realized Air Force flying is very different than the type of flying I had done up to that point. I was willing to learn. Flying jets was great, but very different. In some respect jets are easier. They are easier to start. Push a button and they start themselves. The only engine control is the throttle. Push it forward to go fast and pull it back to go slow. A piston airplane can have the throttle, mixture, cowl flaps, and propeller controls to set.

But jets are fast and in the trainers and in fighters the flight is short. Everything happens fast, fast, fast. We had a saying, "Stay in front of the airplane!" This means: think about what is going to happen next. If you are thinking only about what is happening now, it doesn't work. To help out with this, we did something called "chair flying" -- cheapest training in the world. All it takes is a chair and your imagination. You sit in the chair and imagine flying. The key is to call up into your mind every detail you can about the flight, or

a portion of the flight. We would spend hours doing this and drilled every detail of the flying a jet into our memory.

One guy in our class was having some trouble. I liked the guy and spent some time with him. Quite frankly he was a little bit scattered brained. To him chair flying the pattern to a landing was, "Next to the runway, lower the gear, lower the flaps, turn to final and land." For the rest of us we could talk and talk about all of the details of power settings, airspeeds, details of what to look for, etc. My friend made it out of T-37s, but washed out of his first check ride in T-38s.

While in training, many of us got air sick. I never threw up, but I did get to the point I thought I was going to. We all did. It was summer, the planes were hot, the air was turbulent, the smell of jet fuel was every where, and taking a T-37 out to do aerobatics causes motion sickness. Getting sick was part of the job until you got used to the motions. The question was, can you fly the plane while sick? There was one guy in our class that got sick on his first 18 flights. The instructor didn't have to fly the plane. This guy was an expert of taking out his sick sack, throwing up in it and putting it away in his helmet bag. Meanwhile he could maintain airspeed and altitude. But somewhere down the road you have to stop throwing up.

It turns out the Air Force has a thing called Sick School. They pull you out of training and send you to Brooks Air Force Base in San Antonio, Texas. This is the headquarters of the Air Force medical branch. At sick school they teach you to get over being sick. Three times a day they put you in a chair that can rotate every direction possible. Remember the guys driving the chair are experts in this. They make the poor student sick every time he gets in the chair -- once a day, twice a day, thrice a day -- puke, puke, puke. At first it doesn't take long to get the student sick. But after a while it takes longer and longer. Finally after 2 weeks of puking 3 times a day, everyday, the student graduates and goes back to pilot training.

My friend had missed so much training he had to wash back to the next class. But, he got back into his trusty little T-37 and never got sick again. As far as I know, he went on to a successful career flying jets for the Air Force.

I do know he passed all of his check rides in pilot training – this is more than I can say for myself. I busted my formation check ride in T-38s. It was a typical day in Lubbock Texas. A cold, crisp morning and sky so clear you could see forever. It was a beautiful day. I was ready for my check ride. I had practiced the required maneuvers and could do them all. One of the easiest was route formation. In route formation the number 2 airplane stays about 500 feet from the lead and off at an angle of about 45 degrees from the tail of the lead plane. Number 2 can pick the left or right as he sees fit by crossing underneath lead's jet wash. Route is designed to allow number 2 enough breathing room to follow the lead plane through aggressive air-to-air combat maneuvering. It isn't used in combat much anymore because it leaves number 2 trailing behind and vulnerable to attack, but it is still a required maneuver in formation flight training.

In the check ride, there is a student and instructor in each plane. The students take turns flying lead and then the number 2 position. I was lead first. We got to the point in the flight where my fellow student was going to fly route. We had trained flying route through a barrel roll. A barrel roll is sort of an aerobatic maneuver because the plane does go upside down, but it is by the standards of a fighter aircraft not stressful or difficult. In fact "Tex"

Johnson did a barrel roll in a prototype 707 to impress the potential customers of the plane. It worked. They were impressed and ordered many 707 that day.

The barrel roll is a combination of pitch and roll. In a slower plane, it is typically started off in a dive to gain enough airspeed to complete the maneuver. In a T-38 the dive is not needed. The "Sports Car of the Air Force" is supersonic and plenty fast to do a barrel roll starting from level flight. I picked a point 45 degrees to the left. The idea in a precision barrel roll is to rotate the nose of the plane around this ground reference point in such a way the nose stays perfectly 45 degrees away from this point. I started the nose up by pulling on the stick and at the same time started a roll to the left by moving the stick to the left and adding a little bit of left rudder. As the plane rolls from level to 90 degrees of bank, to being upside down, the amount of back stick and left stick changes – but throughout the maneuver positive Gs are maintained. This means you can do a barrel roll with something on the dash board and it will not come off. Positive Gs is important to do the maneuver in a non-aerobatic airplane because the oil and fuel system need positive Gs to keep the pumps pumping.

I did the barrel roll and my fellow student followed me without any problems. Now it was my turn. We changed places and I dropped back and to the right about 500 feet. The check ride had gone well up to this point. All I had to do was follow my lead through a barrel roll and I would be finished. No problem I thought. I was wrong.

Lead started his barrel roll and to this day I don't know what happened to him. The maneuver he performed had little to do with the easy and graceful maneuver he was trained to do. We had done it in practice many times and had never had any problems. In the Air Force we have a term called a "highayka" that is used to describe an aggressive maneuver that is otherwise impossible to describe. My lead did a perfect highayka. His nose didn't go up to the 45 degrees high it was supposed to, his roll rate was much too high and the worst thing was, before I knew it he was pointed straight down. As a good wingman I followed as best I could. I ended up with my nose going straight down. About the time my nose was straight down, he was already bring his up -- too late for me. The T-38 isn't the fastest jet in the world, but it is pretty fast for a little trainer. I knew lead was going to be a long way away before I got my nose back to level. I was right.

I rolled to wings level, pointed in the direction lead was rapidly moving away, and pulled to maximum Gs on the stick. As soon as the nose was almost level, I moved the throttle to full afterburner. I had plenty of fuel to complete the ride and I was going to have to use a lot to catch this guy.

Unfortunately lead didn't loose as much airspeed during his highayka as I did in mine. He was pulling away fast and becoming smaller and smaller. He finally became a dot, then disappeared. I told my instructor I had lost sight. The instructor asked me what I was going to do. I knew what he meant. There is a rule in formation flying you have to breakout of the formation if you loose site of lead. The rule is written assuming you are still close together and loose sight for something like thick clouds. In my case I lost sight because lead was so far away I couldn't see him anymore. But rules are rules, especially on a check ride. I felt kind of silly, but I called "Lost sight and breaking out" on the radio and did an aggressive turn to the left. The turn is required to keep from hitting lead. I was in no risk of hitting him because he was miles away, but as I said rules are rules.

By this time I figure the check ride is over. I didn't think we would ever get back together in time to complete the ride. But I thought we should try. I asked lead to start a turn to the left so I could get on the inside of the turn and catch up. This is a standard way to do a rejoin. In the mean time, lead was giving me a position report on the radio. In a couple of minutes I saw a dot that after a while became a dot with wings. Maybe I could salvage this ride and complete my check. I had kept the throttles in full afterburner and was going really, really fast – almost supersonic. I pulled the throttles out of the afterburner detent and back to full power without using the burners – military power.

I finally got close enough to lead that I could see which direction he was pointed and maneuvered to be inside his turn. Because I was much faster and inside his turn, I was closing on him fast – really fast. I wanted to nail this rejoin to impress the instructor what a great pilot I was. I figured I was close to busting the checkride and needed to take it up a notch to pass. Let's just say I didn't nail the rejoin. At what I thought was the right time I pulled the throttles back to idle and opened the speed brake. I was closing fast, way too fast. My primary instructor had told me that I could also slip the T-38 to give it even more drag and slow down even faster. For some reason I never tried slipping a T-38. I don't know why. When flying my small taildragger I routinely slipped it on final to increase drag. But for some reason, I didn't think the T-38 was built for slipping.

Slipping would have been a good idea on this rejoin because I was closing too fast. I realized I was going to overshoot. That was OK. Overshoots are an acceptable maneuver and I had been trained to do them. Lead continues his turn and the wingman who is going too fast takes his plane to the outside of the turn. Depending on how much faster the wingman is, he goes further and further away. Because the wingman is on the outside of a turn, he will not go in front of lead even though he is faster.

I was going much faster than lead. I had to go well outside of the turn and wait for the speedbrake to slow me down to match lead's speed. It seemed like forever, but I finally thought I was slow enough. I turned to close back to lead, but I was still too fast. As I got closer I noticed I was going in front of him. No problem, I will just take it back out a little bit longer and give the speedbrake a little bit more time to slow me down. I turned to the right and pulled. During this maneuver I lost sight for second, but didn't think anything about it. I was pulling away from lead and was only going to be banked for a second or two. My instructor didn't agree. Remember the rule about breaking out if you lost sight? I had just broken this rule -- and rules are rules.

I felt the stick shake and heard the call on the intercom "I have the airplane". I knew instantly I had just busted the check ride. There is another rule that if the instructor has to take control of the plane during a check ride it is an automatic bust. I was having a bad time with rules that day.

The instructor only flew the plane for a couple of seconds and gave it back to me. By the time I got it back, my T-38 was slow enough to fly next to lead. I went back to route formation and we tried the barrel roll again. This time it went well and I followed without a problem.

We got back to the squadron room and started the debrief. I thought I had busted the check for not following the highyaka maneuver, and I knew I had busted because the instructor had taken control of the plane. I found out I was OK on not following the highyaka. Both instructors told me they probably couldn't have done better than I did. They

almost busted the other student for how poorly he flew the barrel roll, but being able to do a barrel roll was not really part of the formation check ride. They went ahead and passed him. I was told I could fly formation just fine and was rescheduled for the check ride. It went well and I passed without any problems.

Star Jet the Soothsayer

In pilot training we were put into two groups by the time we graduated. Fighter/IP qualified and not fighter/IP qualified. Those that were qualified got either a fighter aircraft or came back as an instructor pilot, IP, as our first assignment. The common term is "FAIP" for First Assignment Instructor Pilot. But, I wanted a fighter. I knew our class would get 2 or 3 new fighters. At this time the new fighters were the F-15 and F-16. I was ranked about 5 in our class and was out of the running for a new fighter. But we would be getting one or two F-4s. I set my sights on an F-4 assignment. I didn't want to be an instructor. I wanted to fly fighters. I figured if I stayed in the Air Force for a while I would transition to either an F-15 or F-16 someday. If I got into test pilot school out of F-4s, that would be OK also. I knew as a test pilot I would fly the new jets. My goal was still to be a test pilot and then be an astronaut.

I got my F-4 assignment out of pilot training. I was happy. But the Air Force had me go to Fighter Lead-in at Holloman Air Force Base, New Mexico first. All new fighter pilots went to this training before going to learn to fly their fighter. At fighter lead-in, we flew a T-38 that was modified to drop bombs and shoot a gun. It also had a gun site that could be used for air-to-ground and air-to-air combat. The idea was to teach basic skills needed in fighter combat, but do it in plane we could already fly and do it in a plane that is much cheaper to operate than a front line fighter.

I did well at this school and enjoyed myself. One of my instructors had the call sign "Star Jet". I didn't know it at the time, but he foresaw a personality conflict I was going to have throughout my career in the Air Force and at NASA. I didn't think much about what he said at the time, but looking back at his warning I can see he hit the nail right on the head.

I recall studying a lot and really liking the science, physics and engineering of fighter combat. I had a Masters in Aerospace engineering and was well equipped to learn the material and learn it well. I had two flights with Star Jet as my instructor. I also recall some lengthy discussions in the briefing and debriefing about technical matters. I didn't think anything about them. After all we were here to learn, and open and frank discussions with the instructors were part of the learning process – or so I thought. 20 years later I am just now realizing not every fighter pilot and NASA manager likes open and frank discussions. It is impossible for some people to be told their statement has a flaw and they need to rethink it. I realize I have been a walking time bomb dealing with these kind of people. I didn't have a clue I had painted a person into a corner on a technical matter. I had won the technical argument, but they couldn't admit to a mistake or an error. They continued holding to their original point and end up hating me for pressing forward in an effort to get to the truth. I was about 45 years old before I learned to recognize I am dealing with someone who can't admit they are wrong, and I need to drop the subject and come back another day.

Star Jet's warning to me came on graduation day. It is customary in the Air Force to drink large quantities of beer at all celebrations. Star Jet and I both followed this tradition on

graduation day from Fighter Lead-in. He was hammered to the point he could barely talk. I was close. He pulled me close to him and breathed into face, "Deger, I kind of like you but for some reason you piss me off. I don't know what it is but you really piss me off. In fact I can tell you that you are going to piss off a lot of fighter pilots when you get to an operational squadron. You are a good pilot and know your stuff, but you are really going to piss off a lot of fighter pilots." I didn't think too much about it at the time. He couldn't put his finger on the problem and I couldn't either. But he was right.

F-4 Training and Key Largo

I graduated from Fighter Lead-in and was assigned to Replacement Training Unit, RTU, at Homestead Air Force Base. By this time I had sold my little putt-putt airplane so I didn't have to transport it with me. Everything I owned fit into my Volkswagen Rabbit with room to spare. My dream of Air Force flying and becoming an astronaut was alive and well. I was now going to learn to fly one of the most famous fighter aircraft of all time – the F-4 Phantom II.

After flying in the T-37 and T-38 I was awestruck the first time I saw a Phantom. The plane was huge. In both the 37 and 38, in an emergency you could jump over the side without a problem. The cockpit on a Phantom is too far off the ground. The jump would certainly break something. You had to crawl down the built in ladder to get down safely. The maximum gross weight of the Phantom is in the class of a fully loaded Mac truck, and it carries more bombs, by far, than the heavy bombers of WWII.

But it handles like a dream. Even by modern fighter standards, the roll rate of the F-4 is still world class. Yes, it looses speed in a turning fight, but if you need to roll, it isn't topped by anything. The airplane is so sensitive to the stick it has a 3 axis stability augmentation system. This is an analog flight control system that uses gyros to sense motion in all three axes and make inputs into the flight control system to make the plane more stable. I hated the roll stability augmentation and never flew with it on. I liked the raw roll handling of the plane. Pitch stability augmentation was mandatory. In flight test, an F-4 was lost when the pilot induced a pitch oscillation that destroyed the airplane. At high speeds the plane was barely stable in pitch and the pilot's inputs could introduce a fatal oscillation into the system.

The F-4 was originally designed as a Navy fighter. As such it is capable of carrier landings. While the Air Force versions were never certified to do carrier landings, they were capable of doing a carrier like approach. This means you put the airplane on final and let the plane hit the ground without any attempt to flare. I was really fascinated by this. Every plane I had flown up to that point would have broken its gear, or at least bounced way back into the air if it was landed without a flare to slow down the descent rate.

Before my first landing in an F-4, I asked the instructor, "So I don't need to flare at all? I can put the airplane on final at 190 knots and fly it to the ground that way?"

"Absolutely, the plane can do that," he replied.

"OK" I said, "that is what I am going to do"

And, that is what I did. It was great. I rolled out on final and trimmed to 190 knots. Adjust power to maintain airspeed and glideslope. Get everything in shape to hit the runway on the numbers – and don't flare. Bamm!!! Take that runway!!!! The F-4 was without a

doubt the easiest plane to land I had every flown. It is impossible to bounce the plane; the landing gear can take a landing without a flare. For cross winds, you simply crab into the wind and kick the crab out just before touch down. My Piper Vagabond was much, much harder to make a good landing with.

Later when I got to the ARN-101 equipped F-4E, I learned the joy of using a velocity vector indicator to land. Most of the time when cruising around in these F-4s, the pipper display on the Heads Up Display, HUD, showed velocity vector. This is the place the plane is headed relative to the ground. Even though the Air Force spent a lot of money on the ARN-101 system, they didn't upgrade the HUD. We had a simple piper that moved left and right and up and down. It also had a simple display that rolled around the pipper to either show commanded roll angle or range to target. Modern aircraft have a true HUD where there are many different things on the HUD at the same time.

I noticed that during landings with a velocity vector pipper, when things were lined up, the pipper was pointed to the numbers on the approach end of the runway. Then during the flare, the pipper moved up to be just below the horizon, but lined up left and right down the runway. I started using this to my advantage. Get on the center line and on glide slope and put the pipper on the numbers. As you cross the runway threshold, move the pipper to just below that horizon. This resulted in a perfect landing every time.

One day my squadron commander asked me what I was doing landing this way. I realized one of my back seaters heard me talking about using the velocity vector to land and "told on me". I was told to stop doing this -- using the velocity vector to land was not safe and I needed to stop. I did stop for a while. But one day at the bar at Nellis during Red Flag I happened to mention using the velocity vector to an F-16 pilot. He told me they were practically addicted to the vector for landing. He told me jokingly that a no HUD landing was almost an emergency procedure because they relied on the velocity vector so much. By the time I had this conversation, I was coming to realize "The Deeg" was not the person to attempt to convince the Air Force on a new and better way to land the F-4. I just went back to using it with out telling anyone.

Homestead is the last town in Florida before the Keys start. It is a great place to scuba dive. I had always wanted to scuba dive, so I bought a used boat while there and took scuba diving lessons. My squadron commander learned I was taking lessons and counseled me that there was a lot to learn and maybe I should spend my spare time studying. I told him, "I learn really fast. I got great grades in school and didn't have to study much to get them."

"How good were your grades," he asked?

"I got a 4.0 GPA"

"OK, you can take scuba classes." Having good grades has its advantage sometimes.

The diving was great. I bought a used boat for $800 dollars. It wasn't pretty and the trailer was about ready to fall apart from corrosion, but the boat had tall sides which made it OK to take out into the waves. Homestead Air Force Base had a recreation center that rented scuba gear. Pretty much every weekend I loaded up the boat with friends and scuba gear and went diving. At first I went to a reef right off of Homestead called Pacific Reef – not the world's best reef. It wasn't very deep and there was not all that much live coral.

Next I tried Pennekamp State Park in Key Largo. This was a much nicer reef, but very crowded. Being a state park everybody went there. On a good day it was difficult to find a place to anchor and during the dive you might as well have been at Wal-Mart on a crowded Saturday. There were divers everywhere.

I heard about a reef between Pacific Reef and Pennekamp called Carriesfort Reef. This was the jackpot. I only wish I would have found it sooner. It was a little bit harder to get to, but well worth the effort. At the most, one or two other boats would be on the reef on a good day. The reef was also huge and had lots of beautiful live corral. It also went all the way from elkhorn coral that came up to the surface at low tide all the way to huge brain corals off a sandy bottom at about 70 feet.

When I first starting diving I tried to spear fish. This didn't work out that great. Too many other fishermen came before me and too few fish worth eating. I became a reformed spear fisher and started feeding the fish. This became one of my favorite things to do on a dive. Find a sandy bottom next to an active and live reef. Bring down a baggy with some squid in it, open it up and start tearing the squid into little pieces. In just a few minutes the water is full of the most beautiful and colorful fish in the world. It's like sitting in a well maintained salt water aquarium. The color on these little friends is simply amazing.

My other love on the reef was night diving. I discovered night diving about the time I discovered Carriesfort; so I only did it a few times. On my first night dive I was following my buddy and thought I was going crazy. I saw flashes of light coming off of my buddy's fins. Not many flashes but they were there. After a while I realized my mind was OK and the flashes were real. My buddy's fins were agitating some type of plankton that produced light. I wasn't loosing my mind -- yet.

Life at night on the reef is backwards from life during the day. All the animals that are out and active during the day hide in the reef at night, and all of the animals that hide during the day come out at night. At night the lobsters are crawling around in the open, sea urchins are everywhere and even the groupers are out from the cover of the reef. It is quite an experience. I had the opportunity to dive during a full moon one night. The experience of diving over a shallow reef with the flashlight off is something I can't describe. There is enough light to see the animals, but not so much to destroy the peace. If I ever get the chance, I am going to do it again.

Replacement Training Unit, RTU, Graduation

RTU was fairly straight forward. Lots of academics on aircraft systems and combat maneuvering – both air-to-air and air-to-ground. It turned out I had a good sense of geometry that served me well in the cockpit. I did well in dropping bombs and flying air-to-air combat.

I must confess something at this point. I am not by nature a violent person. I have only been in two fights in my life and in both I was attacked by the other person -- I was forced to defend myself. I was raised going to church on Sunday and I read the bible. I thought the teaching of non-violence made sense and I tried my best to follow this rule. Becoming a warrior in the form of a fighter pilot was really against my nature, but it was a necessary step to becoming an astronaut. I also realized I didn't want the world to fall to communism and if I had to shoot down a couple of airplanes or drop a few bombs to help stop communism I would do that. I didn't realize what I was getting into until it was too late.

The primary mission of F-4s in the Air Force at that time was nuclear strike! If the big war broke out in Europe, I wouldn't be shooting down another airplane, or dropping a few bombs on enemy ground forces, I would be in the middle of general nuclear combat that would end the world as we knew it.

My introduction to nuclear combat came in the form of an instructor that loved his job. This guy was really kind of scary. He liked nukes. He thought if a war was started, nukes were the way to go. "Don't mess around with those little firecrackers if you want to kill something. Go for the big bang. With one of these babies a single F-4 can single handily win the war." He didn't bother to mention the Russians had their fair share of nukes and would also use them to win the war.

I was told anything and everything about how to drop a nuke was classified. I must respect this and say nothing about it -- even though a lot of information is available in open literature. I will make this one statement -- the checks and controls on the release of nuclear weapons is as close to fool proof as it can be. The chances of an accidental or unauthorized release is close to zero.

After learning how to drop nuclear bombs as well as conventional bombs, it was time for our final flight at RTU. This was a final exam and a flight that for the first time exercised a large number of aircraft hitting the target in a coordinated fashion. I remember the flight well. I was number 2 of a 2 ship formation and we were in the middle of the strike package. We flew a low level training route to the range with other aircraft flying different low level routes to the same range. Spacing was done with timing. My lead was responsible for timing between our flight and the other flights. I just flew formation off of him. We flew tactical spread – I stayed line abreast of him separated by about a mile. This is the standard formation used today by combat aircraft. There is enough room for independent maneuvering and each aircraft can watch the other's tail for an attacking aircraft coming from behind. The problem is turning the formation. After the turn, both aircraft need to end back up line abreast again. The Air Force has developed a set of check turns and weaving to do this.

The battle plan was for my lead to attack the target first. We were only dropping 25 pound practice bombs that put out a little smoke. But, they simulated regular bombs that generate a large amount of fragmentation. I needed to pass over the target after lead's bombs fragments had time to get below my altitude. To get this spacing I turned hard into lead and crossed behind him at a 90 degree angle. I flew about a mile to the other side and made a hard turn to parallel his path, but now well behind him. We both used a standard popup attack. At about 5 miles from the target I made a hard 30 degree turn away from the target and pulled the nose up 30 degrees – then I looked toward the target area to find the target. I saw it, but the angles were wrong. I climbed to 4,000 feet and pulled into the target. The angles were getting worse. I couldn't roll out and be on final. Intuitively I realized I needed to do a small and quick barrel roll to line up on the target. This was not the way it is supposed to work. I had never done a roll in the middle of a bomb pass. Without much thought I did it. I had enough sense to tell my back seat instructor, "Rolling onto final." Without this call I was afraid he might think I was out of control and bailout on me.

The roll worked great. It occurred to me the instructor might find my roll as unsafe and bust me on the ride, but I ended up on final and dropped my string of practice bombs. I found out later I hit the target. Then it was time to egress and get back into formation. I

turned to the egress heading and advanced the throttles to military power. The plan was for lead to do two 90 degree turns to fall back and get us back into formation. I saw lead and watched his turns. Not enough – I was still way back. Time for more speed. I moved the throttles past the military power detent and took them to full afterburner. I felt the comforting push back in the seat. I was still way back but had lots of fuel for the afterburners. I left the throttles parked full forward. I was supposed to be line abreast with lead and I hated being out of formation.

The planned altitude was 500 feet. Looking outside it looked about like 500 feet, but I checked my altimeter. It read 1,500 feet. I didn't think I was that high but altimeters don't lie – I started a slow decent. The ground was starting to look pretty close so I checked the altimeter again – 1,300 feet. I was starting to think something was wrong with the altimeter because if I went any lower I would be below the trees. One more glance at the altimeter. I saw it bouncing between 100 feet and 1,300 feet. I suddenly realized what was wrong. I was right at Mach 1 and the shock wave was bouncing around the altimeter's static port on the nose of the plane. A little bit faster and the shockwave would have move in front of the plane and clean up the static port. I was supersonic on the deck at about 100 feet!!!

About this time I realized I was leaving the range and starting to head down the Kissimmee River back to Homestead AFB. I saw a lock on the canal. There were 4 cars in a parking lot and several chairs with people fishing. I was going so fast I barely take it in before going straight over the top of them. I had a good idea of what those poor fisherman went through -- the word "loud" doesn't even come close. I have heard F-4s in the traffic pattern at 1,500 feet and at a modest power setting. This is so loud you can't carry on a normal conversation. Supersonic at 100 feet in full burner had to be really, really bad on the old eardrums. One thing I knew for sure, they didn't hear me coming. I was going faster than the speed of sound.

My efforts to catch lead finally paid off. Lead slowed down some and I finally caught up. We did a short low level to egress the target area and made a landing back at Homestead without incident. I was concerned about busting the ride for one of many reasons – rolling on final, being out of formation, and going supersonic off the range. None of this was a problem. The instructor passed me and I was soon off to the 'baker fields of North Carolina.

Seymour Johnson Air Force Base

I sold my boat in Florida for what I paid for it, packed my Rabbit back up and headed north to Seymour Johnson AFB in the middle of the state of North Carolina. It was the spring of 1981 and my path was right past Cape Canaveral and Kennedy Space Center. The timing was perfect for me to watch the first flight of the space shuttle. I stayed the night in Cocoa Beach and got up early to see the launch. I wasn't all that close, but it was a clear morning and I knew I could see OK. I waited and waited, but no launch. Finally the radio said something about a bug in the backup computer and the launch was scrubbed. So much for watching the launch of the first space shuttle. I had orders to be at my new base in a couple of days, so I had to head north.

I was really not prepared for Goldsboro North Carolina. My grandfather had a ranch in Texas and he lived in a small town there, but compared to Goldsboro North Carolina, Shamrock and Amarillo Texas are a cultural oasis. This is saying a lot too. Both of these places in Texas are not culturally advanced compared to a lot of the world.

At Goldsboro North Carolina it was my turn to become a cultural snob. Goldsboro is about halfway between Raleigh to the west and the coast to the east. Raleigh wasn't too bad. It has a major university and is the state capital. The coast isn't too bad because it attracts certain people that like the water. But Goldsboro has one and only one thing other that the Air Force Base – 'backer. I would say tobacco, but I don't think I heard a native say tobacco in my 3 years there. The word was 'backer pure and simple. We all felt like we were in the middle of a Mayberry RFD episode. We were complete with Mount Olive and its pickle factory not too far away and a big weekend for us was a trip to Raleigh.

Even the State Museum of Natural Science in Raleigh admitted to the historical lack of culture of the state. During colonial times Virginia was to the north and South Carolina was to the south. Both of these colonies had a strong government, cities and trade. North Carolina had none of the above. It was a haven of misfits and criminals. Black Beard the pirate had a shallow draft ship that could navigate the inland waters of North Carolina. Because there was no colonial government, he was free to do as he wished while inland. The colonies of Virginia and South Carolina finally put a party together to put a stop to him. I was really amazed that the state museum discussed this lack of culture as openly as it did.

But Seymour Johnson AFB was there and was an island into itself. I had done well at pilot training, at fighter lead-in, and at the Replacement Training Unit. But, I wasn't prepared for interfacing with a squadron of egotistical fighter pilots. I knew some fighter pilots didn't think a book smart person could be a good pilot, but my career goal was flight test school. I didn't think having a reputation of being book smart would matter. I didn't know then about my problem of dealing with people that can't admit they are wrong. I flew well, but my personal interface with many in my squadron took a serious nose dive from the first second I met them. I had no idea at the time how much a person with a big ego and a position of power can deliberately hurt a good person's reputation. I spent the first 2 years fighting these big egos without realizing what I was up against, then finally turning my reputation around during the last year I was there.

My first commander was Michael Short. I made the mistake of having a conversation with him on how to drop bombs. Manual bomb dropping is half science and

half talent. There are many complex rules on airspeed, altitude, dive angle etc. The manual pass is always planned for and forecast wind corrected before taking off. The manual bombing site setting is calculated and dialed in. This positions the sight a certain angle below the nose of the plane based on what is needed for the planned bomb pass. But a bomb pass is never perfect. The dive angle is never perfect, the winds are a little different, airspeed is not perfect, the list goes on. Correcting left and right is fairly easy. If you see the target moving to the left, you need to move the plane left until the target is moving straight down the windscreen. About the only correction needed for left/right is for winds.

Correcting for long and short is 99% of the work of dropping a good manual bomb. It is very complex. Exactly when to hit the pickle button and release the bomb is always a decision to be made while coming down final – "down the chute" we called it. The decision is made based on many, many inputs, fast thinking and little bit of guessing. On this conversation with Colonel Short, he was much more experienced than I, but I had the advantage of more recent study and also had my keen intellect that got me through engineering school with straight As and pilot training without missing a single question. At the time I was confused about something he said about initial piper placement and how this would influence when to hit the pickle button. I recall not having my confusion clarified. It was important for me to understand what he was teaching me, so I kept stating why I was confused and kept asking for clarification. We went around and around about this and I finally realized my confusion was not going to be straightened up. In summary, I finally stopped asking him about this issue on how to drop bombs.

I realize now what was happening. The reason I was confused is because I had painted him in a corner with my logic and something he had said was not quite right. Being who he was, he couldn't admit he had made an error. Being who I was, I didn't realize I was dealing with a person that can't admit a mistake. He never got over it and looking back now it looks like he did his best to make my life at the 334th TFS as bad as he could make it.

I made another powerful enemy in the form of Captain John "Lips" Fraley. Captain Fraley got his call sign by saying in a meeting he was going to "rip his lips off" when talking about someone he didn't like. The name stuck. Our primary mission at the 334th was nuclear strike in Europe in the event the Soviet Union attacked toward the west to take over Europe. We were based in North Carolina, but there was a base in Germany ready for us. It had shelters for all of our planes, a shelter for us, ground equipment, and munitions. Before the Air Force would declare me Mission Ready, MR, I had to pass an extensive test on the rules and procedures on the employment of nuclear bombs. It was a very formal process and not taken lightly by anyone. The first time through was called the Initial Certification and other times called Recertification. Recertification was done once a year.

Lips and I were assigned to certify the same week. During the week of certification, nothing was scheduled other than study. Lips and I both had the same briefing from one of the weapon's sections enlisted men on the rules and procedures. I thought it went well. Immediately after the briefing, Lips complained that the briefing was substandard and requested his certification be cancelled that week so he could do it again with a different briefer. I thought the briefing was OK and the rules and procedures were well documented and easy to read. This was Monday and I continued toward my planned certification on Friday. Friday came and I had to stand up in front of a panel of people and certify. It went well and I passed without problems.

I soon came to think the mentality of the group of people I was working with was much like I was dealing with in junior high – not high school, junior high. I thought this somewhat jokingly to myself, but I was closer to the truth than I realized. For some reason I was bullied in junior high. I transferred in the middle of the ninth grade and the local bully and his friends decided it would be fun to pick on me. It didn't last long, but the effect was terrible. I was terrified, but I didn't want to fight back. After I moved to high school this bullying stopped and I thought I was finished with it.

Unknown to me, Lips, during this time, was telling everyone how bad the briefing went and how bad I was going to do during my certification. After all, if the briefing wasn't good enough to refresh him on what he already knew, how could it possibly be good enough for a new guy to pass with. I do recall the Friday night at the Officer's Club after me passing my certification. As was customary, I had a few beers and was feeling good. I had just passed a major milestone in my career. Lips confronted me in the parking lot. Like Star Jet at Holloman AFB, Lips was hammered. He grabbed my shirt and pulled my face right into his. To this day I don't recall what he said, but I do recall he was furious with me. He said something about embarrassing him and I better not do that again. I didn't think much about it, just like I didn't think much about my conversation with Colonel Short about dropping bombs. But in retrospect, I know now I was 0 for 2 in dealing successfully with big fighter pilot egos. Life at the 334th TFS was about to get very interesting.

While, I thought I was dealing with the emotional level of junior high children while at the 334th, I didn't quite put the term bullying onto what was happening to me. For some reason the thought of grown men practicing bullying in the workforce didn't fully enter my mind. I thought if I kept showing these fighter pilots I knew what I was doing, one day I would be recognized as a good pilot. I finally was, but only after Lips and Colonel Short left the squadron.

After being bullied at NASA, my mind completely snapped. As a result I studied what was happening to me. I came to the conclusion I had much more post traumatic stress disorder and was much less bipolar. I had stumbled across workplace bullying causing post traumatic stress disorder in adults. Unfortunately, this is not well known and understood. But in many workplaces people act much like the bullies in a playground act. Someone becomes unpopular and a person in power starts to pick on them. Others in the work force pickup on this and join in. But unlike the playground where the bullies are out in the open and "honest" about their dislike for their victim, workplace bullies hide their behavior and often pretend they are trying to help their victim. The usual solution is the victim becomes unhappy and leaves. In cases where leaving is not easy because of money or other factors, the victims mental state can degrade until their mind can snap. This didn't happen to me while in the Air Force. I overcame the bullying after the two key players left. At NASA my mind snapped under this pressure in 1999 and to a lesser degree in 2006. When I attempted to alert NASA management to bullying in their work force, they told me I was threatening people and fired me -- so much for trying to help.

Bullying in the 334th reached its peak on an air-to-air combat training ride. This ride was called Advanced Combat Maneuvering-1, or ACM-1 for short. It was considered an easy ride for a pilot because the WSO was responsible for the intercept portion of the fight and in this ride, the target didn't maneuver. In theory all the pilot had to do was follow the direction of the WSO to get into firing position and then kill the target. It didn't go this way

for me. The ride was a complete disaster. At the time I thought the other 5 crew members were simply clueless on what was happening. Now I realize that probably the only clueless person was our squadron commander, Michael Short, and everybody else was simply afraid to tell him he was clueless. It was also obvious at this point he didn't like me much and people in the squadron were certainly not going to back me up.

My WSO for this ride was the one and only Lincoln Quigley. Quigs, as we called him, was a great WSO. He later became my flight lead and he treated me well. But he was a disaster this flight. There were 3 planes involved in this instructional ride -- my lead, myself and the target plane. Colonel Short was scheduled to fly the lead plane, but was not at the start of the briefing. Quigs took control of the briefing and planned one of his favorite intercepts that the lead plane hooks behind the target with number 2 supporting. After a visual ID of the target, the lead plane kills the target. The briefing is scheduled for 1 hour, and about 20 minutes before we are supposed to step to the jets Colonel Short shows up and changes everything with too little time to coordinate everything. He wants to do what is called a Shooter Eyeball intercept. In this intercept the number 2 airplane drops back about a mile and the lead plane does an intercept to pass close to the target from the front – beak to beak. If the lead airplane IDs the target as hostile, he calls this to number 2 and then number 2 takes the shot. This is done because when passing beak to beak, by the time you can ID the target, you are too close to shoot a missile. As the name implies, one plane is the shooter and the other is the eyeball.

Colonel Short briefs the way to do this intercept is to simply point straight at the target. I instantly realize this will only work if the target is pointed straight at the lead plane. If pointed off by even a few degrees the lead plane needs to turn his nose out in front of the target a bit. If he doesn't, he will be in a tail chase and end up behind the target. This was taught to me at training in Homestead. There was even a name for the amount needed to point out front. The name for the place to put the target is called the Collision Antenna Train Angle, or CATA for short. Even the old analog radar on the F-4E presented the CATA to the crew so they could fly directly to the target and not roll out behind him.

I wait until we are stepping to our jets to coordinate using the CATA with Quigs. I could tell Quigs is upset about something -- really upset. I ask him what is wrong.

"I hate shooter eyeball intercepts. They are stupid. Number 2 is trailing by a mile and has no support. He is a sitting duck to get shot down."

"OK, Quigs I see your point. But that is what is briefed and that is what we are going to do. One small point though. We can't point at the target and pass beak to beak. We are going to have to put him on the CATA." I said this without a thought because I knew Quigs would instantly agree to this small change. I couldn't have been more wrong. One of the worst waking nightmares a person can go through was about ready to start.

"No Deeg, you heard the briefing. We were told to point at him and that is what we are going to do."

I pressed my point, "Quigs, you know as well as I do the CATA is by definition where you need to put the target to brush him off. If we start off with any angles at all and we just point at him, we are going to roll out behind him." Repeating the point did no good. I was told we were going to simply point at the target as briefed. I go to plan B. I knew the target setup would not have too many angles, so the CATA would be a few degrees off the

nose. I would just wait until we are airborne and cheat a few degrees of turn and point in front of the target as required.

We got into the target area and started the first intercept. I was lead for this intercept and Quigs locked onto the target. The CATA was about 10 degrees off the nose. I cheated from Quigs calls to point straight at him and I put him on the CATA instead. It didn't work. Quigs caught on and told me to turn back. I told him that if I fly his heading we will end up rolling out behind the target. Quigs had nothing to do with me flying the CATA. He started yelling out of control, "Dammit, I said point at the target. Turn now."

"Quigs you know if I do that, we will end up behind the target." This didn't help. Quigs kept yelling. I knew I was the aircraft commander, but I was only a lieutenant and Quigs was a major. This was also a training mission and Quigs was officially an Instructor WSO and I was officially his student for this ride. This fact and him yelling out of control at me made me decide to follow his heading and point at the target. I knew it will blow the intercept but I figure they couldn't blame me if pointing at the target resulted in me rolling out behind the target. After all "everybody" knows this. I wrong on not being blamed.

My airplane was equipped with a high powered telescope in the leading edge of the wing. This telescope was called Target Identification System Electro-Optical, TISEO – pronounced tis-ee-oo, and with it you could see the target aircraft from miles away. One of the rules of intercepts was as soon as I saw the target with my eyes, the WSO had completed his work and I take over from the front seat. I pulled up the picture of the TISIO which was slaved to the radar and I saw the target. I saw he was not pointed at me and I needed to turn if I wanted to avoid rolling in behind him. Based on this picture I turned to complete the Shooter Eyeball intercept.

"What the hell are you doing? You aren't pointed at him anymore. Turn back now!!!"

"But I have a visual on the TISIO and am turning to complete the intercept."

"Dammit Deeg, you can't use a TISIO picture this way. You have to wait until you see him with your eyeballs. Turn back now and stay there until you see him without the TISIO."

I was not in a mood to argue whether a TISIO image passed the test for a visual, which meant his job was over. I was coming to realize my WSO's enormous hate for shooter eyeball intercepts and him being forced to complete one was making him hard to work with. I turned back to point at the target.

The TISIO picture was great though. With this and the radar, I knew we were passing behind and below the target. It was turning into the type of intercept Quigs liked without us really trying. The problem was my number 2 aircraft was off to my left and we were in a left turn. I needed him on the right side.

I waited for a visual with my eyeballs and I then I took charge. I called to my number 2, "Cross to the right. I have a visual and I am offensive. Stay on the right and support."

We were in perfect shape for me to roll out behind the target and I needed to estimate how much lead I needed. It worked out well and I rolled out behind the target at 3,000 feet. Perfect range for a heat seeking AIM-9. "Fox 2, Kill, Knock-it off," I called. Everyone in

the flight called knock it off. I thought I had done OK. How could I be faulted because pointing at the target didn't work? We had just proved that. We pointed at the guy, and I ended up rolling out behind him.

We repeated this process two more times that ride. I kept hoping that at least once the target would point straight at me so pointing at him would work. While I was killing the target every pass, at least once I wanted to do a shooter eyeball as briefed. I was certain I was passing the flight because we were killing the target every pass.

The ride was over and I was wrong about passing it. As soon as we were down, Colonel Short proceeded to chew my ass out for not doing a shooter eyeball intercept. I told him I was doing my best by attempting to put the target on the CATA, but Quigs was having a fit every time I did that. I also pointed out to him that failure to brush him off was the result of a bad intercept and the WSO was responsible. He yelled at me, "You are the aircraft commander. If you don't like the intercept, you need to know enough to take charge and do it yourself." I pointed out that was exactly what I was trying to do, but I was a student on this ride and Quigs was the instructor WSO. He was also turning into a yelling monster if I didn't follow his headings. I looked at Quigs expecting some confirmation that this was what had happened. I got no support from Quigs.

Colonel Short kept insisting his way of doing the intercept would work. We had tried it 3 times and failed 3 times, but he wanted to try it again. He called the desk and stole a 3 ship from some other people in the squadron and said we were going to fly my ACM-1 mission one more time and this time I was going to do shooter eyeballs.

The second flight was an exact repeat of the first flight. Three intercepts, three attempts to cheat and put my nose out front, three times I saw us passing behind, three times I changed the intercept to have me kill the target, three times I do a perfect visual final intercept and roll out in perfect killing range of the target. Needless to say, I busted the second ride as well as the first.

To this day I don't know what everyone was thinking on these two rides. At the time I thought everyone in the briefing, the flight and the debrief simply didn't understand enough about intercepts to know what was going on. Later I decided they had to know, but the whole flight was a planned activity to take me down a notch or two. Now I think the most likely answer is Colonel Short was the only one that thought pointing at the target would work but I was the only one with enough guts to let him know he was wrong. It is my guess that Quigs knew exactly what was wrong with the intercepts, but hated them so much he was willing to have me bust ACM-1 twice in a row to prove to Colonel Short how bad shooter eyeballs were. All what I know for sure is I officially busted the easiest ride for a pilot and I did it two times in one day. My reputation in the squadron went way down that day and I knew it to the core of my soul.

My final certification to Become Mission Ready

I had passed my standup verbal nuclear certification and all of my conventional weapon delivery tests at the 334th. All I had left to complete my certification to become Mission Ready, MR, was to pass a flight test of my ability to strike with a nuclear weapon. This was always done as a single ship attack aircraft with the certifiers flying in trail to score the flight.

Our mission was to simulate dropping a nuclear weapon on a river bridge. The flight would be over populated terrain and nothing would be dropped. My bomb would be scored by me verbally calling "Bombs Away" on the radio and the certifiers would call it a hit or a miss based on their judgment. To practice low level flying, we had to stay in an authorized low level training route. Minimum altitude was 500 feet. One of the first rules of navigation in our F-4 was the compass, clock, and map reading were primary, our highly accurate ARN-101 system was to be used to help fine tune the attack. To facilitate using the compass, clock and map technique, we always set an Initial Point, IP, on the target run. This was an easy to see visual land mark about 15 miles short of the target and the rule was to never have more than a 15 degree turn at the IP. The IP was used to get lined up for the final attack.

Unfortunately for me, my certifiers gave me a target about 15 miles after a 90 degree turn on our low level route. To make matters worse, they told me a surface to air missile battery was located at the only easy to see land mark at the turning area. I complained about the setup. I was forced to violate two cardinal rules of IPs, first it had a 90 degree turn, second it was a tiny road crossing a tiny river and I probably wouldn't see it. They heard my complaint and even though they agreed this scenario was not realistic, they wouldn't back down. I was stuck with an IP that was less than optimum, not even close to optimum.

I knew the chances of me finding the IP were slim to none, so I developed a plan with my back seater. We would update the ARN-101 at the point before the IP, and if we didn't find the IP, Arny would show us the way to the target. I need to interject one thing about Arny, it was very reliable for navigation. Up to this point it had never failed to navigate me to the target. Sometimes, it dropped really bad bombs, or didn't drop the bombs at all, but for navigation, it was basically 100% reliable. As luck would have it, Arny died completely as we approached the IP. Fortunately I had hacked my clock and was flying a heading to take us to the IP. As the clock approached the desired time, I looked for the IP. I wasn't surprised to not see the IP, it was after all a tiny road bridge over a tiny river. At the assigned time, I did my hard 90 degree turn to head to the target. At the same time I reset my clock to start the timer for my final run.

I was flying completely off of the compass and my clock. There were no land marks on the ground to speak of -- nothing on the map and nothing on the ground. As I approached the target based on my clock, I still didn't see it. I climbed to 1,000 feet and told my certifiers I was climbing to acquire the target. I saw it to my right at 3 O'clock and about one mile away. One of the required skills of nuclear strike is precise timing of the weapon's detonation. I knew I was going to be late, but if I did things right I would be within the time allowed. Turning right was not much of an option. The target was too close to make the turn to the right. I turned away from the target with a hard left turn for 270 degrees. Kind of like a clover leaf on an expressway. It worked great. I was lined up on the target at a 90 degree angle from my originally planned attack heading. At the correct time, I called "Bombs Away" on the radio. I wasn't sure but I thought I had a scored hit in the time window allowed. I was right. In the debrief, I was told the certifiers scored my release as a hit and confirmed I was in the time window allowed. It was official – I was now Mission Ready, MR. If a war broke out, I would get to go.

Too hot to jink and the aggressors

The Air Force has a couple of squadrons of top pilots that are trained to fight like we think a potential enemy might fight. These are called the aggressor squadrons. When I was

at Seymour Johnson Air Force Base, they were flying the F-5. The F-5 was much smaller and slower than the F-4E, but it could turn better. Just after my disastrous intercept rides had ruined my reputation as a pilot, the aggressors showed up and another comedy of errors caused my first ride with them to be a disaster.

For some reason the squadron set the first ride to have the aggressor start off already in position and in range for a heat missile. The fight would start with the aggressor behind the F-4 at about 6,000 feet. Even if the F-4 was flown perfectly, the F-5, with its superior turning performance should win the fight easily. When you throw into the equation, the F-4 pilot is young and has never flown against an F-5 before and the F-5 aggressor pilot is very experienced at flying against F-4s, the fate of the F-4 is pretty much sealed. The F-4 is going to loose.

My first flight was even worse than expected. I had a guest instructor WSO that traveled with the aggressors. There is an important term in flying fighter and shuttles. It is called G's. In fighters it is a measure of how hard you are turning, in space flight it is a measure of how much you are accelerating. Sitting on the ground in your arm chair you are experiencing 1 G. I wild roller coaster ride might take you to 4Gs. Fighter aircraft routinely go to 9Gs. This means you are turning really fast.

In my briefing I told him I needed him to be my verbal G meter during my first high G turn and to also monitor Gs through out the fight. I needed this because I would be looking back and could not look at the G meter in the cockpit. If he saw I was not flying the jet aggressively enough, he was to tell me. In a defensive fight, this is about all the WSO can do.

It was in the middle of the summer at Seymour Johnson and we were in the middle of a heat wave. Not only was the heat up, but the humidity was horrible. As we were walking to the jets, I had a second or two of feeling very light headed. I had never had this happen to me before. I almost declared myself Duty Not Involving Flying, DNIF (pronounced DeeNif) and cancelled the flight. But I was 100% certain my short period of being light headed was just due to the heat. In a few minutes we would be in our jets and have the air conditioner cool the cockpit down. The F-4 had an excellent air conditioner and it could cool the cockpit on the hottest of days. This didn't happen on this flight.

The preflight, taxi, and takeoff all went well. The problem started in the climb out. I heard my WSO say on the intercom, "You need to dump the cabin pressure; I have a bee back here." This was the start of a horrible flight – the problem is dumping the cabin pressure also stops the air conditioner. I also didn't like the idea of flying up to around 30,000 feet in an unpressurized cockpit.

I replied, "I can't dump the pressure. We need the cabin to be pressurized and it is hotter than hell in here. If we dump the cabin, we will loose air conditioning."

My WSO didn't like this idea, "There is a bee back here. I am afraid he is going to sting me."

I asked him, "Where is the bee?"

"It is on the Plexiglas of the canopy."

"Well, use the heel of your hand and smash him."

"That might just make him mad and he will sting me."

I was starting to think this guy was a real wimp, “Look man. You are covered from head to toe in flight suit, gloves, mask, and helmet. There is no place exposed for him to sting.”

This went on for while and I realized I had two choices, dump the cabin or abort the flight. I certainly didn’t want to face my peers as the aircraft commander that aborted a mission for a bee in the cockpit. I reached to my right panel, pushed in the safety button and pulled the cabin pressurization dump valve all the way out. I could feel the heat sink back into my body.

The flight went horrible. The F-5 simply ate me up. He always started out with the offensive advantage and he stayed that way. I simply could not shake him loose. I knew the F-5 could turn better than an F-4, but I didn’t think it would be as bad as this. Fortunately, our fuel finally ran low, so we headed back to home.

After getting out of our flight gear, we headed to the debriefing room. The last flight of the day had not taken off, so the beer light was not on. Too bad, I could have really used a cold Bud and that point in my life. The debrief was brutal. The aggressor pilot that flew the F-5 led the debrief. He started with the first engagement and explained that my turn did not take him out of valid missile shot parameters. At that time my WSO piped in with, “And you were only pulling 4.5 Gs at the time.”

I was instantly furious with my WSO, “Then why didn’t you say something? I told you in the briefing to be my verbal G meter until my butt was calibrated. You sat there and watched me flail around and get killed and didn’t say anything?”

“I don’t like being a verbal G meter, so I didn’t do that.”

My anger was growing, “Then you should have told me during our crew briefing. As the aircraft commander I gave you that assignment and you didn’t say anything. You sat there in the plane and knew why we were both getting killed and said nothing?”

The aggressor pilot took the briefing back and proceeded to explain to me how he killed me and told me I should have done this and should have done that. I interrupted with, “Listen, we all know why the flight went so bad. I was only pulling 4 and half Gs when I should have been pulling 6 and half. Can we just cut this debriefing short? You won and we know why. Going over every turn of every engagement will do us no good at this point.”

The aggressor pilot didn’t see it this way. We spent a good 45 minutes going over every turn of every engagement. It was obvious to me the aggressor loved “winning the debrief.” I don’t think his goal was to teach me how to fly properly. His goal was to pump himself up as being better than his students.

About 2 years after this happened to me, Peter T. Kempf who was the commander of the aggressor squadron at the time was fired for exactly what I saw happening. It became obvious to Kempf’s boss that the aggressors did not have the overall goal of training new pilots on how to fight a Mig. It was their goal to win the fight and pump up their own huge egos by doing so. I had a later opportunity to fly against the aggressors after Kempf was fired. It was all the difference in the world. The later flights were obviously designed to train instead of humiliate. The aggressors would even make a “mistake” to see if you would exploit it.

Red Flag

Red Flag is the most realistic aerial combat training in the world. It is also the most fun a fighter pilot can have outside of shooting down a Mig. In my career, I went there twice, but the first ride is the one that generates the best story. During our initial briefing, we were told real Migs would be flying against us – Mig 21s and Mig 19s. At the time, it was highly classified that the US was flying Russian aircraft, but it has since been declassified. Apparently we got some from Egypt and India. Using actual Russian aircraft was the most realistic aggressor training we could get.

All of the Red Flag missions I flew were a counter clockwise flow around Area 51, a.k.a. Groom Lake, a.k.a. "The Box". We would fly on a northerly heading on the east side of the box. This was usually at high altitude and a KC-135 tanker would top off our tanks as we headed north. With full tanks we would head west and stay to the north of The Box. This leg was in military airspace, but the land is not owned by the government. This area is the high desert and lightly populated. There is a small town called Rachel, Nevada just east of the Nellis Range and just north of The Box. There were rules to not go too low over the town and to not be supersonic. Unfortunately, in the heat of the battle, it was not uncommon for F-111s, F-105s and other planes that easily go supersonic to not realize they are leaving the range at very low altitude and supersonic. The story was the people at Nellis Air Force Base are very used to calls from Rachel about damage to the town. Writing checks to cover the damage is part of the cost of operation for Red Flag.

We were told to stay out of Area 51 at all cost. A U.S. plane with a dire emergency could land on the runway in the middle of Area 51, but all foreign pilots were directed to bailout rather than land in The Box. We were also told if we did land in The Box, we could expect to stay for about 2 weeks and go through extensive debriefing. We were told very clearly we would not like those two weeks. Around the bar at night we would talk to each other about what was in The Box. It must not be the Migs, because we knew all about them. History now tells us that the answer must have been stealth aircraft such as the F-117. This was before Jimmy Carter announced to the world we had a stealth aircraft.

I must admit I was tempted to use my telescopic TISEO to look into the box and see what I could see. But the TISEO could only look about 40 degrees left and right and our flight profile never had us headed toward the box. Also, if I got caught attempting to look in The Box, I knew I would be in more trouble than I ever had been in my life. I would probably be discharged and possibly spend time in jail at Fort Leavenworth. I never made the slightest effort to look that direction with my TISEO.

Our flight plan was simple. We would go down to low altitude after topping off our tanks and ingress from the east in tactical formation – line abreast with one mile separation. Much like my final flight at Homestead, the plan was for me to make 2 ninety degree turns to get well behind my lead. This would give his bomb fragments time to fall back to earth before I got into the target area. This time we were dropping live 500 pound bombs instead of the little 25 pound bombs that made a little smoke.

As we were ingressing, I saw what looks like a Mig-19 behind my lead in range for a heat missile. I called "Break right" on the radio. Lead had not seen the plane but he turned as hard as he could to the right. One of the rules of combat in a formation is you follow your buddy's commands and ask questions later. I also broke right to engage the enemy aircraft

that turned right to follow my lead. I moved my weapon select switch on the throttle handle to the Aim-9, heat seeking missle, position. In seconds the pipper was on the target and I got a loud growling tone in my headset to let me know the missiles seeker could see the target. My technique was to always uncage the missile's seeker with the button on the stick. Doing this caused the missile to lock-on instantly and the distinct tone of the lock-on let me know the missile had found the target. After uncaging and getting the lock-on tone, I squeezed the trigger to "launch" my simulated missile. The instant I squeezed the trigger, I realized my mistake in identifying the target. It is not a Mig 19, it is a Navy EA-6B. Too late to save this plane that was trying to help up out by giving us close electronic jamming. Fortunately this was only training and my missile was a simply a training device that has an actual AIM-9 seeker, but no motor or warhead.

I called out to lead, "Come back to the left, the threat is an EA-6B at your six o'clock". The lesson to me was: If you are not briefed into the flight, don't take you aircraft into somebody's six o'clock position without radio contact. Also I realized I needed to do a little bit better job of aircraft recognition the next time.

We got the formation headed west again and flew over the Initial Point, IP. I always made it a point to memorize my run from the IP to the target. This practice served me well. Before stepping to the jets, I would force myself to draw from memory all visible landmarks from the IP to the target and then in the target area. I felt this was needed because during this portion of the flight, I was too busy to look at a map. Failure to ID the target is a significant reason for a failed attack. My technique served me well and I never missed a target in my career flying F-4s.

We both hit the target and egressed to the west. We had planned for lead to do some turns to get us back into position – 1 mile line abreast. The turns worked perfectly and we ended up line abreast headed to the west going really fast. I saw a couple of dots slightly above the horizon headed right to left. I knew they were aircraft that were part of Red Flag. The Rules of Engagement, ROEs, state we have to have a visual ID on the enemy before we can shoot. I called the targets out to my WSO and he was able to get a radar lock. My aircraft had the TISEO system that allows for long range visual IDs of the target. Even the air-to-air F-15s didn't have this capability. While still miles out, I looked at my display and ID the aircraft as an F-5. For this day at least, all F-5s were bad guys and needed to be killed. I checked the launch envelop display and saw we were in range for a radar guided AIM-7. I called "Fox 1 on the F-5 headed south on the west side of the range". I waited a few seconds and take a second shot. Two valid missile shots. By the rules, I have just scored a kill.

Unfortunately, at that time the Nellis range didn't have the capability to automatically track every aircraft and track every shot taken. That capability was added later. I attempted to get my kill recognized in the debrief, but didn't have any luck. We were primarily an air-to-ground asset and nobody wanted to hear about a new air-to-ground guy scoring a valid kill on his first Red Flag mission. At least I was able to tale my tale at the bar that night. Having a back seater helped. He was able to brag about the kill just as much as I did. After all, he was the guy that did the hard work in getting the radar to lock on to the right target. At low altitude in an F-4 this was not an easy task

Night time gaggle

Every now and then the wing would practice launching a large group of planes at once. We called this a gaggle. Shortly after obtaining the status of Mission Ready, MR, we had a night gaggle to the warning areas off of the east coast of North Carolina. The mission was to fly a radar trail departure to intercept with a tanker, top off our tanks, head off to the range and do intercepts on each other. Not really a hard mission by the standards of other things we did. But this mission would turn into a nightmare for me.

Radar trail is very simple. The formations take off with about 2 miles spacing and the trailing aircraft use their radars to follow the leader. The only tricky part is to not turn as soon as the leader does. You have to wait a few seconds to get to where lead made his turn then make the turn to follow. I was number 2 of a two ship and as such had very little responsibility to navigate and fly the radar trail. My job was to hang onto lead in finger tip formation and let him take us to the tanker and then the warning area.

The problem started when my lead's left landing gear didn't retract after takeoff. Even though it was night, I could clearly see his left main gear didn't retract. I called him on the radio and confirmed to him his cockpit indication of a gear failure. We didn't know this at the time, but the left main gear locks had been left on. The gear lock on the F-4, is not a simple pin with a flag on it. It is two large pieces of metal attached with hinges that completely cover the inner part of the gear strut. This was a pretty big piece of metal that everyone had somehow missed.

Lead aborts the flight and heads home. I do not; I was now on my own. My back seater was Dale Wainwright. Not the sharpest WSO in the squadron, but a senior Captain and very capable at his job. I told him to get a radar lock – the front seat in the F-4 has no radar controls, only a scope to look at. Dale attempted to find the lead plane and the planes between us and lead. It should have been a simple task. The radar automatically sweeps left to right and a thumb controller in the back moved the antenna up and down. A common technique is to move the radar up or down a degree or two every time it finishes one of its left to right sweeps. For some reason I have never figured out, Dale could not acquire the lead aircraft. He was moving the elevation up and down many degrees at a time in what appeared to be a random fashion. I could see this on my scope and I tell Dale to calm down his elevation movement. A couple of times I saw the lead aircraft on the scope and noted the elevation angle is 2 degrees high. I called to Dale, "The target is 2 degrees high. Move the elevation to 2 degrees high and you can see the targets."

My call did no good! Dale continued to flail away with his elevation control. Fortunately, there was a backup to flying a radar trail without radar. The backup was for all of the airplanes to fly the same airspeed and the same ground track. To do this we used TACAN which is a navigation system that tells you your direction from the ground site and your distance. Seymour Johnson had a TACAN on the base and we had briefed that at 5 miles on the Distance Measuring Equipment, DME, we would do a 30 degree bank turn to the right. This was a turn of about 90 degrees heading change. At 5 miles DME, I started my 30 degree banked turn. What I didn't know at the time was the lead aircraft didn't turn at 5 miles as briefed, he turned at 7 miles. Without a radar lock, I didn't know this. The geometry was simple. I turned at 5 and he turned at 7. I ended up to miles two the right, but didn't know this at the time. Lead made a second mistake. He didn't announce to us he had turned to late. I guess his fighter pilot ego didn't allow him to admit his mistake on the radio.

After the turn, we continued to attempt to find everyone on our radar. By this time it was too late. They were off to my left about 2 miles. I started looking around for other aircraft. I finally picked up a plane directly to my left at 9 O'clock. I looked a little in front and saw a trail of planes in front of this one. I had no idea how they got there, but that had to be them. I called the lead and told him the situation and he told me to join up with the 2 ship formation that was directly in front of me, or was suppose to be in front of me. I turned hard to the left and point at this formation. This time, Dale was able to get a lock and I started the rejoin. There was no plan in the flight for rejoins, so there was no built in turn to facilitate the rejoin by flying inside the turn. My target was flying straight ahead and my only way to catch him was to fly faster. I got behind them and parked the throttles in maximum afterburner. Unfortunately, John "Lips" Fraley was leading this two ship. He knows it was me behind him and he immediately started to ask me why I am not in formation yet. I kept the throttles in full afterburner and watched the closure speed readout on the radar start to clock up. Lips was still in a climb, so his power was up pretty high. It took awhile, but I finally got about 150 knot of closure velocity.

Then I was overcome by an optical illusion. I was watching the two ship formation and each plane was a single point of light. For an instant it looked to me that each point of light was the wingtip light on a single airplane. Instead of being a couple of miles behind two airplanes, it looked to me like I was very close to a single airplane and closing at a very high rate of speed. I think Dale must have locked onto a plane in front and we were about to collide. I did what I had to do. I pushed hard on the stick to go down and slammed the throttles to idle and deployed the speedbrake. I expected to see my windscreen fill up with an F-4 as I passed under it. This didn't happen. The lights simply moved slowly up my windscreen. My mind adjusted again to the real sight – I was trailing a two ship at a couple of miles. Unfortunately, taking the throttles to idle and opening the speedbrake more than killed my closing velocity. Back to full afterburner and more listening to Lips gripe on the radio about where in the hell I am. I don't really blame him, because it was taking me a while to catch up with him.

I finally joined up just in time to intercept the tanker. Not only was it night, we were popping in and out of the clouds. In and out of the clouds is probably the worst situation for maintaining situational awareness on flight attitude. In an aircraft, without seeing the horizon or looking at instruments, it is impossible to tell bank angle. It is common that if you are in a turn long enough, your body starts to think you are actually wings level. Then when you roll out of the turn, your body tells you that you are turning the other way. This is called "the leans". The only solution is to ignore what your body is telling you and trust the instruments.

Well, I got the world's worst case of the leans while on the tanker. While attached to the tanker, you can't do much of anything but look at the tanker and fly formation with him. The tolerances are not that great and even a quick look inside can lead to disaster. While flying on the tanker, it is doing a race track pattern in the sky. The tanker gets to one end of the refueling airspace and makes a 30 degree bank turn for a 180 degree heading change. I got the leans really bad on this mission. My body attempted to tell me at one time we were upside down. I had the strongest sensation that we did a complete roll to the right. At one point I thought about hitting the disconnect button and dropping back until the leans stopped, but I didn't need to. I told myself that I could follow the KC-135 through any maneuver he could do. I stayed squarely in the middle of the fueling box and got my gas. I needed a little

bit extra because of all of my time at afterburner. I made the mistake of telling Dale that I had the leans and felt that at one point we were upside down. Dale later used this piece of information as laughing material in the squadron bar, "Deeg thought we were upside down while on the tanker."

As bad as my ride was, I was fortunate compared to the plane that didn't make it back. Yes, one of the planes in our sister squadron didn't make it back. They disappeared without a trace. Six days later a fishing boat picked up the WSO, but unfortunately, the pilot was never found. Here is their story:

While separated from their lead preparing for an intercept, both generators dropped off line at the same time. This left them with only the battery, which doesn't power much. There were clouds between them and Seymour Johnson, so they decided to attempt a rejoin with another F-4 that was in the warning area and fly fingertip formation home. As I have already said, there were many Seymour Johnson F-4s in the warning area and they knew this. They picked a set of navigation lights and headed toward it – expecting a quick rejoin. To speed things up, they put the engines in maximum afterburner and kept them there. After a while, they became concerned about how much time it was taking to rejoin, but they stuck with their plan -- rejoin with another aircraft and come home in fingertip formation.

In hind sight they should have changed plans after a while. But, they did not. After consuming a huge amount of fuel, they could finally see the plane. It was an airliner headed south out over the Atlantic. They attempted to get the airliner pilot's attention. Unfortunately, they followed a rule they should have broken. The rule is you can't fly closer than 2,000 feet to any aircraft that you are not in formation with. They forgot about the rule that overrules everything – in an emergency the pilot can break all other rules if he needs to. They stayed 2,000 feet away from the airliner and attempted for several minutes to get his attention with a hand held flashlight. This was the only light on the plane because none of the external lights are powered off of the battery. Needless to say, the flash light at 2,000 feet was not noticed.

They finally came to realize that they were so low on fuel they may not make it back to land – feet dry – before needing to bailout. They break off from the airliner and head back to shore. About 50 miles from shore, they do run out of fuel and have to do a controlled bail out.

The WSO landed in the water safely and was quickly in his life raft. This should have been a simple and easy search and rescue, but it was not. One of the first things the WSO did was bring in his survival kit and take inventory. In doing this, he put everything in the bottom of the small one man raft he was in. His second step was to bail out his raft. It was still dark and I am sure he wasn't thinking 100% clearly -- he forgot that his survival gear was in the bottom of the raft. Most of his gear was bailed out with the water. Most important of this equipment was one of his two radios.

The other radio remained at the bottom of his raft for a while and should have been OK – they were after all water proof. Unfortunately, this one had a bad o-ring and allowed water to get inside. Now he had no radio at all. It is interesting to note that today, all radios are packed in a water tight baggy in addition to them being made water tight and all survival equipment in the survival pack is tied to the pack with a string.

The WSO spent 6 days before a random fishing trawler picked him up. At the same time the Air Force had finally found tapes of a radar site that saw the whole thing and they were about ready to send search and rescue to the correct place. Up to this point, the Air Force had no idea where he was. The delay was caused largely because with the loss of both generators, the plane's transponder failed. The transponder is a device that sends back to the radar site a 4 digit number and the plane's altitude. The larger, longer range air traffic controllers, in this case Washington Center, do not have radar that sees the actual airplane, what is commonly called "skin paint". They can only see the output of the transponder. Without a transponder, the plane was invisible to Washington Center.

The radar that could see skin paint was setup for air defense. Why did it take 6 days to find out this capability and look at the radar data tape? I have no idea. We were debriefed "Mistakes were made," but not told any details. After getting the radar skin paint tapes, it became very clear what happened. The radar showed the F-4 joining up with an airliner, flying formation, coming back toward land, then disappearing.

It turned out to be too late. A random fishing trawler picked the WSO up before the proper search and rescue could be mounted. One of the first things the WSO asked was "Where is the pilot," and "What took so long?" The WSO swore that on the first night, within hours of ejecting, he saw the light of a boat passing by, a flare from the pilot go up in the air, then the boat stop to pick him up. For the 6 days he was out there he was certain his pilot was picked up and he would be found immediately. What happened that night remains a mystery to this day.

It is automatic that the Air Force does a drug test on all crew members that are involved in an accident. They did this to the WSO and found a very small amount of THC in his blood stream. It was so small that it was barely detectible. Unfortunately, the WSO told the truth to the accident board that he had smoked some pot in college about 6 years before the accident. He should have lied. The level was so low as to possibly be a false positive. But, the Air Force had no choice but to discharge him after he confessed. At the time, and maybe true day, there was zero tolerance for drug use in officers. As an enlisted guy, you can stay in with some record of drug use -- but not for officers. Any indication at all and you are out.

I got this information on THC in the blood stream from the Flight Surgeon that was on the accident board. He told me that normally after 6 years, THC does not show up on a blood test. But in this case, much of his body fat was used while going without food for 6 days. A small amount of THC was in his fat and was released into his blood stream as the fat was consumed. I never found out for sure, but the rumor was the WSO didn't want to fly after the accident and told the truth about his marijuana use as a way out of flying.

Finger tip and Formation Landings

I hate flying finger tip for long periods of time. This is formation flying as most people think of it -- very close to each other, almost overlapping wing tips. It was not hard, but it was tedious and stressful after a while.

As I said earlier, there is a rule that if you loose sight of your lead, you must break out of formation. This usually happens when flying finger tip in the clouds and it takes some really thick clouds to cause you to loose sight of lead while this close to him. But it happened to me 2 times within a few months of me joining the 334th TFS. They were all

legitimate lost wingmen. I was in formation and the clouds simply got too thick to see lead. There is no firm rule, but after a few seconds of not seeing lead, I did the mandatory 30 degree turn away from him and called lost wingman. At this time, lead has to talk to the air traffic controller and get him to control the lost guy separately. It is a major pain in the ass for lead when his wingman goes lost wingman.

I knew after my second lost wingman, going again would not do much for my reputation. This was after my disastrous Air Combat Maneuvering training ride, and I was reading in the tea leaves that the squadron commander didn't like me. I pretty much made a vow to never go lost wingman again. As fate would have it, I almost went lost wingman while on my buddy's "Lips" wing. It seamed like every time something bad happened, Lips was my lead.

It was a typical cloudy night in North Carolina. We had gone to the range for some night bombing and were flying home. Because it was cloudy, we were in finger tip. All was well until the clouds start to thicken up and I was loosing sight of lead every few second. I ask Lips to turn his formation lights up to high. These were lights designed as glow panels that could not be seen from a distance. The theory was to allow night formation flying, but not allow the enemy to see the lights of the plane. Lips apparently didn't hear me or didn't care. The lights stayed at the same level. I was not happy. Lips kept disappearing and reappearing as we went into and out of thick clouds. I was bound and determined to not go lost wingman again. I tucked my airplane in closer than allowed for by the standards of formation flying. I probably moved in about 6 feet and his wing tip light was very close to my canopy, or at least closer than normal. All of a sudden I heard Lips on the radio, "Eagle 22, what are you doing. Move back out!!" I knew by the tone of voice I am in trouble, and I did get a good old fashion butt chewing in the debrief. I can't say I blame Lips for being pissed off. I was closer than allowed. It turned out that being that close, caused a significant rolling tendency on his plane. I was on the left and my plane caused his plane to roll right. I explained to Lips that I had already gone lost 2 times recently and didn't want to go again. He didn't care. Like I said I can't blame him, I was too close. But, at least I didn't go lost wingman!

My least favorite thing to do in formation is land. The planes are slowed down to 190 knots on final and control is relatively sluggish. You really have to move the stick around to get the plane to move. Because you are so close to lead, you have very little time to look for yourself at the runway. If lead doesn't do his job right, you could land short, or land off to the side of the runway. Lowering the gear is always a lot of fun. You have to watch for lead to lower his, and then react by lowering yours ASAP. Because your gear is always later than his, a throttle adjustment is always needed to not move forward.

Then after touchdown, there is no room for error. A blown main tire could easily cause one plane to turn into the other. To get separation ASAP, lead is taught to delay opening his drag chute for a few seconds. This way number 2 drops back behind lead. After this happens, the planes can veer left and right and not hit each other.

The normal way to land is what is called the overhead break. The number 2 plane is put on the side opposite of the break and the formation flies down the runway at about 1,500 feet altitude. As the formation passes over the runway lead breaks and number 2 stays level for a few seconds. After the delay, number 2 breaks.

One of the rules was number 2 can not fly a pattern further from the runway than lead. One day this almost killed me. Lead did a very aggressive break. By this I mean he makes a small/tight turn. I followed. If you are too close to the runway, you can't make the turn and you overshoot. I knew I was closer than I ever had been in my life, and I was going to have to make a maximum performance turn to final. At the proper time, I started a turn at the optimum Angle Of Attack, AOA. The F-4 had an audio feed back on AOA and had a nice solid tone in the head set when on the optimum AOA. I was inside lead's turn to start off with, so I am out of his wake turbulence. But, I must go right into the center of his wake turbulence to line up on the runway. Wake turbulence is like small horizontal tornadoes that can cause huge roll rates if you get into one. Normally, a fighter can fly into another fighter's wake turbulence without any big problems. But lead was doing a more aggressive turn than usual which made his wake stronger. Then I was at a higher than normal angle of attack which decreased my aileron effectiveness. The end result was when I hit his wake turbulence, I rolled instantly about 120 degrees to the left. I knew I was in big trouble. Fortunately my training and instincts kicked in. At a high angle of attack, the F-4 does not roll well. I needed to get the AOA down. To do this I pushed the stick full forward until it hit its stop. At the same time I gave the plane full right rudder. About the time my controls become effective, I left my lead's wake turbulence and rolled quickly back to the right. I overshot the roll a lot and ended up in about 90 degrees of roll to the right. The AOA was down by now, so the ailerons start to work. With left aileron and left rudder I brought the plane back to level flight and actually made a good landing without having to go around. The roll excursions lasted a second or two at the most and I was still on glide slope and on the centerline of the runway. My WSO told me after landing he was reaching for the ejection handle as I was fighting for control. Before he could pull the handle, I had the plane back under control. I am glad he didn't have time. At our altitude and roll angles, we probably would not have had time for the chutes to open before we hit the ground.

What was strange for me at the time was the lack of interest in what happened. We were well trained to avoid the wake of heavy airplanes, but the general thought was the wake turbulence of another F-4 was not dangerous. I asked that the Tactical Air Command safety organization be brought in to get the word out that if the pattern is flown too aggressively, lead's wake turbulence could be deadly. My request was denied. I requested the topic be brought up at the next wing safety briefing. Again my request was denied. I didn't at the time understand why loosing control in the traffic pattern would not be of interest to the F-4 safety community. Now I think I know why. Leads are not supposed to fly such a tight pattern. He was very likely attempting to embarrass me by flying a pattern tighter than he thought I could. Even if his overly aggressive pattern was not meant to embarrass me, he was at fault for the near miss. It wasn't my favorite lead, John "Lips" Fraley, but it was a respected flight lead of the squadron. If you are part of the in crowd, you can screw up and not be called on the mistake. If you are not in the in crowd, every tiny issue is blown out of proportion and used to further damage your reputation. Being in a fighter squadron was just like being back in junior high.

Near loss over the North Atlantic

"Ghost" was a member of the in crowd. He was a Vietnam vet, 4 ship flight lead, and had a big booming voice on the radios. He was definitely "in". This became more obvious to me and others when due to his gross error, he and his WSO almost had to bailout

in the middle of the North Atlantic. The surface winds were high, the waves were high, and they almost certainly could not have survived until rescue could get to them. Instead of facing a Flight Elimination Board and having his wings yanked, he got the official TAC Well Done award and a very nice pin and pencil set from the Tactical Air Commander. Watching this happen really opened my eyes to how much injustice there was in the fighter pilot community. If I had done what Ghost did, they probably would have yanked my wings -- his mistake was that bad.

Our primary mission in the 334th was air-to-ground combat in central Europe if the Soviet attempted to move west. Every year, we deployed to Germany for the massive Reforger exercise. Ghost was part of a routine 4 ship formation going across the Atlantic. Out in the middle of the Atlantic, we flew along with a tanker escorting us and we kept our tanks pretty much full. The rule was you could not let your fuel drop so low that you couldn't make a runway if you couldn't tank anymore.

While being escorted by the tanker, one of Ghost's engines failed. Not a really big problem in an F-4 – assuming you fly the airplane the way you are supposed to. The check list clearly says to let the plane slow to 250 knots indicated airspeed and allow the plane to descend to an altitude where the one engine can maintain altitude. This was very basic to engine failures and we were all well trained to do this. Ghost apparently didn't like the idea of having to descend. When he slowed to 250 knots, he didn't allow the plane to descend. He forced the plane to stay at altitude and his airspeed bleed down. 190 knots is about as slow as you can fly an F-4, so at 190 knots airspeed Ghost started the descent. The problem is the F-4's minimum drag is at 250 knots. If you go faster, drag increases and if you go slower drag increases. The drag at 190 knots is much greater than the drag at 250 knots.

The plane at 250 knots would have had enough thrust at 15,000 feet altitude to stay up with one engine. At 190 knots, the drag is greater than the thrust from a single engine. Ghost, his WSO and his plane continued the descent. It turns out that an F-4 full of fuel and carrying three external tanks can not be flown on one engine at any altitude at 190 knots. The descent continued.

At about 1,000 feet altitude, Ghost started to realize he was in bad trouble. He knew he was still descending and at that altitude could see the angry sea below him. He and his WSO knew bailing out was not a good option for survival. He lit the afterburner on the engine that was still running. Both engines are close to centerline on an F-4 and single engine doesn't produce a lot of yaw and roll. But at 190 knots, one engine failed and the other in afterburner, the plane rolled away from the good engine. Fortunately, Ghost had enough sense to realize what was happening and pulled the good engine back to military power. I talked to the WSO later about what was going through his mind at the time. He was super pissed off at Ghost for not flying 250 knots and he was starting to come to grips he was going to die in the near future.

Meanwhile, Ghost's wingman was performing a miracle that saved Ghost and his WSO. The WSO in the wingman aircraft was tracking the tanker on his radar. He wasn't just tracking, he was commanding the tanker to turn to roll out in front of Ghost. This is not something he had ever done. Our tanker rendezvous always have the tanker fly wings level and we used our radar to turn to intercept. This time it was backward. Whether it was beginner's luck or great skill the tanker rolled out about a mile in front of Ghost. Ghost was only going 190 knots, so the tanker slowed down to less than 190, so Ghost would catch up.

To do this, the tanker had to lower flaps and perform slow flight maneuvering techniques. It worked and Ghost was able to catch up to the tanker.

Ghost's problem was this: his plane had more drag than thrust. Even at this low altitude, he didn't have enough thrust. The tanker crew had the idea of attaching the refueling boom to Ghost's F-4 and pulling him with the boom. This is not what a refueling boom is designed to do. It is meant to have the plane keep the boom extension centered with very little force between the boom and the plane. But the tanker crew knew the boom would pull about 2,000 pounds before it popped loose from the target plane. Ghost got on the boom and the tanker increased thrust a bit. It started to work. The tanker crew added a little more power and the airspeed increased a little bit more. Then it happened. Too much pull and the boom snapped free from the F-4. But now the crew knew what power setting on their plane would result in a disconnect. They slowed back down again and Ghost reattached. This time the tanker crew kept their power low enough to not cause a disconnect, but high enough that when combined with the thrust from Ghost's good engine, the plane accelerated. They accelerated and climbed to safety. After getting back to the proper airspeed of 250 knots, Ghost's plane could fly single engine at about 15,000 feet. The flight diverted to Iceland and large quantities of beer and whiskey was drunk that night.

In the official debrief and awards ceremony where Ghost got his well done award, it was mentioned that the checklist is there for a reason, it is suppose to be followed as written. It was also brought up that as we were taught as students, minimum drag in an F-4 is 250 knots and this is the speed to be flown. In the same meeting Ghost's mistakes that almost caused the loss of an F-4 and two aircrew's lives, Ghost got his pin and pencil set from the Tactical Air Commander.

Gear up landing and spread eagle civilians

In the middle of my tour of duty at Seymour Johnson AFB, I had a very interesting flight without even starting my jet. All of the excitement came from watching two unusual landings. I strapped into my trusty F-4, turned on the power and got on the radio to get a weather update and to get my clearance. I was told the runway was closed because an F-4 was coming in for a gear up landing. I turned off the radio, had the crew chief disconnect external power and I then unstrapped from the jet to watch the show.

I had a good seat to see all of the excitement. My jet was parked close to the runway, and the F-4 is really tall. Standing up on my seat gave me a great view. In a few minutes I could see the airplane coming in for its gear up landing. It was not a complete gear up, only the nose gear was stuck up. I found out later when the pilot first attempted to land a few minutes before, he did not get a green light on the nose gear indicator. The guys in the tower confirmed his nose gear was still up. He aborted the landing and flew off to attempt to see if some aggressive maneuvers would get the nose gear to come down. It didn't work, so he came in for a nose gear up landing.

After touchdown, he kept the nose up for just a few seconds. He then lowered the nose gently to the ground. As soon as the nose touched the ground sparks went everywhere. It was quite a sight. After rolling down the runway about 4,000 feet the plane came to a stop. What happened next was really funny.

For some reason it took a while for the crew to open their cockpits and get out. We were well trained in how to perform an emergency egress and it can be done in seconds. The

two crew members took much longer that we had trained for. About the time the canopies opened the fire trucks arrived and started hosing down the front of the plane with fire suppressant foam. These trucks could really put out a lot of foam and a lot of it went into the cockpits. The canopies went back to closed with the crew still in the cockpit. In summary it was: canopies open, massive foam bath for the crew, then canopies close. It was really funny to watch. I wish I had a camera.

The show was over – so I thought. I was about ready to climb off of my front row seat and go back the squadron's building. But, before I did I noticed a large contingency of security vehicles approaching the flight line with their lights flashing. There were about 3 cars and one armored personnel carrier. I thought this was strange. Many fire trucks had scrambled for the emergency landing, but why did we need so much security. I thought I would wait and see. I was not disappointed.

In a few minutes I saw a plane approaching for a landing. I recognized it as a small, low wing Piper. I didn't know it at the time, but its engine had quit and he was making an emergency landing. The runway was full of a broken down F-4 and many fire trucks.

The little Piper was headed toward our parallel taxiway. He made a good landing and came to a stop. Within seconds, the little Piper was surrounded by a large number of security personnel, all armed with M-16s.

Four people got out of the plane. It looked to me like a dad, a mom, and two kids. The securities guys did what they had to do. The family of 4 ended up laying flat on the ground with their hands behind their heads. I can't begin to imagine what that poor family was thinking. Something like, "What have I gotten myself into?" The family probably didn't know that Seymour Johnson was not only the base for the 4th Tactical Fighter Wing, it was the base for a B-52 wing. There were 4 B-52 loaded with nuclear weapons on the base and many more nukes in a bunker. Security was very, very tight

Elephant Walk and Destroyed Wing Commander's Plane

Almost always the F-4 was started by using high pressure air from a ground unit we called a start cart. The air from this cart was blown over the engine's compressor blades to spin it to a speed great enough that once fuel was applied, along with a spark to start the combustion, the engine would produce power. If you try and start a jet engine that is not already spinning, the flame tends to go out the front just as much as it tends to go out the back. The initial spin is needed to keep the flames going out the back were they can spin the turbine blade and increase engine RPM.

There was one exercise that used the self start capability of the F-4. This was the elephant walk. The idea of the elephant was to exercise launching all the planes in a short period of time in the event of enemy attack. There are not enough start carts to start all of the planes at once, so the self start cartridges are used.

These cartridges are about the size and shape of an oil filter. Instead of a filter, they contain a pyrotechnic device that burns for about 10 seconds. The exhaust of the cartridge is aimed at the engines compressor blades and the engine is spun up to starting RPM. These cartridges make a lot of smoke. An elephant walk is very interesting to watch. The flight line is full of so much smoke, you can barely taxi.

During my first elephant walk the wing commander's plane was destroyed. The crew chief didn't screw the cartridge in all of the way. When the pyrotechnic was lit, the cartridge flew out of the bottom of the airplane at a 45 degree angle. It hit the concrete and bounced into the wing tank that was holding about 500 gallons of jet fuel. The flame coming out of the cartridge ignited the fuel. The crew did an emergency egress to get out of the burning plane.

To make matters much worse, the other engine had already started. One of the functions of a running engine is to pressurize the wing tanks. This pressure is how the fuel flows up from the wing tank -- there are no pumps. Needless to say, a pressurized tank will leak fuel at a much higher rate than one without pressure.

The crew made a big mistake; they didn't shut the engines down before they egressed. This means the tank with the massive leak continued to have fuel pouring out of it at an alarming rate. The crew chiefs and fire department tried their best, but they could not get the fire under control soon enough. The plane was a total loss. I am so glad I wasn't the pilot that didn't get the engine shut down as he was trained.

The wing commander was super mad as he should have been. His plane was beautiful. It was the only plane in the wing that was maintained to near perfect condition. The paint was perfect, the interior was perfect. And keep in mind this was the wing commander that when asked why the airmen never got a pat on a back, told them "Lack of punishment is reward enough for a job well done!" Like I said, I am so glad it wasn't me.

Sea of Numbers Briefing

Being an excellent engineer and being really, really smart had its ups and downs in a fighter squadron. The down side is fighter pilots have huge egos. They don't like to admit anyone is smarter than they are. If they are painted into a corner and proven wrong on a technical matter, many will not admit their error. Painting a senior narcissistic fighter pilot into a technical corner is a great way to make enemies. In retrospect I did this many times without realizing it.

The plus side of being a highly intelligent engineer is learning the complex weapon systems inside and out. I did this for all of our weapon systems, especially our ARN-101 bombing system – affectionately known as Arny. Arny was tricky to learn. It was a digital computer system that we used for navigation and for dropping bombs. It was not understood as well as most of our other weapon systems because it was new and very few F-4s had Arny.

Arny had two major problems in dropping bombs. First of all it was not uncommon for Arny to not drop a bomb at all, or it would drop the bomb hundreds of feet short of the target. Until I came along, the only way to see if Arny was going to suffer from one of these two problems was to drop a bomb.

Fortunately we had an onsite representative of the company that made Arny and he had a complete set of manuals. After weeks of talking to him and studying volumes of documentation, I came up with tests for both of these problems that could be made before the first weapons release.

The error of dropping the bomb well short of the target was caused by a faulty angle of attack input to Arny. To drop better bombs, Arny used the difference between airspeed and ground speed to calculate wind. The computer would then use the wind estimate in its

bombing calculation. The problem occurred when the angle of attack, AOA, estimate became corrupted. The old, analog AOA instrument on the F-4 was prone to fail with an output of 180 degrees. Arny did not have any reasonableness test to throw out a bad AOA input. It would calculate winds and bombing solutions based on this AOA estimate. Arny knew based on the inertial measurement system, INS, that it was flying forward at 400 knots, but the airspeed was thought to be 400 knots backward. The wind solution for this situation is the wind speed is 800 knots from the tail. Based on this wind estimate, Army would drop the bomb well short, expecting the 800 knot tail wind to blow the bomb to the target. The fix was simple. Look at Arny's estimate of winds and if it is not reasonable, don't use it to drop bombs.

The second problem was no release at all. This was also a simple fix – force Arny to attempt to drop a bomb before actually dropping a bomb. I was a little bit concerned about doing this because of the possibility of dropping a bomb off of the range. The test was preformed by activating Arny for a bomb release, including hitting the pickle button on the pilot's stick, but safing the actual release by not selecting a weapons station on the weapons panel in the front cockpit. If the pilot ever made the error of not having the front panel set up correctly, a bomb would be released.

I prepared and gave my "Sea of Numbers" briefing. The title of the briefing was Arny was a digital computer and thus was like a sea of numbers and difficult to understand. My opening slide was a crew member drowning in a sea of numbers. The next slide was me throwing a life preserver to the drowning crew member. My point was this: Understanding the guts of Arny was difficult, but I had come up with two simple tests of Arny to stop the gross errors of no release and grossly short bombs. The pilots and WSOs both loved the briefing and my two tests for a sick Arny became standard procedure for the squadron and then the wing.

On the way to the range, we would safe the front panel and ask Arny to drop a bomb. I put my pipper on a target that wouldn't be too bad if a bomb did come off, such as the middle of a lake. When I found out others were picking targets like a house, we had a second briefing and the word got out to stop picking houses, cars, or anything that might have people in it.

How to Strafe

Strafing a ground target with an F-4 makes little sense. The amount of damage that the 20 milli-meter projectiles can do on a target is very small compared to other air-to-ground weapons. Another thing is the need to expose the aircraft to enemy surface-to-air missiles and guns because the range of the gun is very limited.

But we did it anyway. It was one of the required skills that had to be practiced a certain number of times every 6 months. Every pass was scored and recorded. If you didn't strafe often enough or well enough you would be taken off of mission ready status. Fortunately the minimum required to qualify was not that high and it was no trouble to stay qualified.

I first learned to strafe while flying the T-38 at Holloman Air Force Base as part of Fighter Lead in training. Strafing for me went something like this. You set up a 10 degree dive angle using the same techniques as for a 10 degree bombing pass. This means a rectangular pattern around the target area. It would also be possible to strafe from a pop-up

attack from a low level ingress, but we never did. All pop-up attacks were followed by the release of bombs on the target.

After getting set up on final, some way to have the pipper on the target at the same time you are in range must be found. The technique I came up with was to immediately put the pipper on the target and keep it there for as long as possible -- usually a second or two. It is impossible to fly with the pipper on the target for more than a couple of seconds at a time. The motion of the plane tends to move the pipper away from the target and there is a limited amount of pipper movement that can be done with the rudders and the elevators.

The technique I developed was to time the motion so the pipper ended up on the target at the time to shoot. Some times this means pulling to pipper off a bit earlier than I had to, adjust heading and dive angle with the stick and the rudders, them move the pipper back.

The ARN-101 bombing computer (Arny) had a ground strafing mode. The computer would calculate the trajectory of the cannon shells to the target and put the pipper on the HUD where it thought the shells would be. I found the error in the computer was too much. I could strafe with an iron sight better than with an Arny position pipper. An iron sight refers to a pipper that is moved up and down the HUD with a simple knob control and fixed to the center as to left/right movement.

The second trick to good strafing scores is to put out very few rounds on the first pass, see where the bullets impact, and correct the next passes based on the observed impact points. Using this technique made a huge impact to strafing scores. I had to make one modification to the strafing pass for this to work. I was taught to pull the nose up with a 4 G pull the moment the trigger was released. The problem was the nose came up so fast that I couldn't see the bullet impacts. I had to delay the pull about one second so I could see the impacts of the bullets.

Most of the time the gun was sighted so poorly very few rounds would score a hit if the pipper was placed perfectly on the target. If the first pass showed the bullets hitting high and right, I would move the pipper low and left for second and third pass.

The scoring system is a microphone that detects the sonic boom of the bullets as they come by. If the boom is loud enough, the system scores a hit. Missing left/right and up/down was not the only way to decrease the sound of the bullet. Firing from longer range meant a slower bullet and a weaker sonic boom. The strafing score was increased by closing to minimum range. There was the risk of coming too close and being fouled by the range operator. To help out with this I used my back seater to make a strong "stop" call on the intercom as I passed the foul line.

All of this was fun, but pretty much useless for the mission we trained for, World War III in Central Europe.

The Deger Lag Maneuver

I was trained primarily for air-to-ground combat. Compared to more modern fighters the F-4E was not a good dog fighter. We did not carry all aspect heat missiles like the AIM-9L. We had to get to the enemy's rear to shoot a heat missile. And we did not have the high thrust to weight ratio of the modern fighters. This meant we bled off airspeed quickly in a turning fight. In light of this our doctrine was to only go offensive if the situation had the

possibility of an easy shot. If we didn't get the quick offensive shot our doctrine was to attempt a separation and fight another day.

This is not the way we trained. Separations in training were rarely practiced. The way to separate was to pass close the other plane at close to 180 degrees relative heading, i.e. beak-to-beak. Then unload to decrease drag and accelerate away at maximum thrust. In training this was not done often because it was simple to do and the fight was over too soon. I recall one flight very clearly where I was up against one of the better and more senior flight leads. We start off neutral – line abreast and separated by 2 miles. We both turned aggressively toward each other and pass beak to beak – all the while attempting to get toward the others rear. After two head on passes I did a separation. The point of a separation was to be outside of missile range before the opposing aircraft can turn around to bring one of his missiles to bear. I successfully separated after two turns, only to hear the lead call out somewhat sarcastically, "Come back here and fight like a man." The moral to the story is we did not train to fight by our doctrine. Close in turning fights, called furballs, were too much fun to avoid in training. Rather than get a quick kill or separate, we routinely digressed into the furball fight we all knew would leave us vulnerable to an enemy aircraft.

Soon after my arrival at the 334th Tactical Fighter Squadron I had an idea for a new tactic. When presented with an offensive advantage on an adversary that was turning, we were trained to point our nose in front of him. This is called a lead turn. The problem with this tactic is the opponent aircraft creates angles, i.e. his tail moves away from a valid heat missile shot or a guns tracking shot. If the opponent and you are both competent pilots, you never get to his tail for a valid shot. The end result is a fight that both planes bleed off airspeed and become "grapes" for any passing aircraft.

My tactic was to put my nose behind the other aircraft and get to his deep six o'clock, directly behind him. In this position, you are not pointed at him and can't take a shot. My idea was to fake an overshoot. Make him think you are coming in so fast that you can't bring your nose to lead and your excess speed is going to make you pass in front of him. For an overshoot the correct maneuver for the plane that started in the front is to reverse the direction of turn. In other words if in a left turning fight before the overshoot, you turn hard to the right after the overshoot. And, if the trailing plane was indeed going to fast, he will now be in front and to the right, and almost always in range for a heat missile or even a guns shot.

My idea was to fake the overshoot by getting behind the other plane. If he doesn't reverse his turn right away, go further behind. The point is to get so far back that he can't see you anymore. If he thinks you are overshooting, he will turn in anticipation of you passing in front of him. If he does this, he will actually be turning in front of you and can be killed quickly with a valid heat missile shot or even a guns tracking solution. If he is good, he will realize you are not overshooting and he will continue his turn. If he does this he gets to live, but you get a good separation by departing the fight while staying behind him as he turns.

I thought of this maneuver early in my career as a fighter pilot. I realized it violated a fundamental rule I was taught, namely keep your nose in front of your opponent. I asked a couple of senior pilots and instructors what they thought of my idea. Without exception, they had a very strong opinion that putting your nose in lag while offensive was not a good

idea. I could not persuade anyone that my tactic might have merit, so I did not try it for sometime.

A few months before leaving the squadron, I knew my time flying fighters was limited. I decided to try my tactic. I had thought about it many, many times and I thought it would work. I could not see anything bad happening. I would either get a quick kill or be able to separate cleanly.

A week of air-to-air training showed up on the schedule. Normally the vast majority of our flights were dedicated to air-to-ground training, but about twice a year, we flew mostly air-to-air for a week. I took advantage of one of these times to try my maneuver.

It was an overwhelming success. I killed the opponent with valid heat missile shots every time. I never got to test the separation maneuver if the opponent didn't reverse his turn. Out of the ten times I tried it, every opponent reversed his turn when he lost sight of me. And even more amazing, nobody appeared to embrace the maneuver as a tactic worthy of using often. Even after watching it being used successfully over and over in a short period of time, my fellow pilots could not get over the bias of always pulling you nose out front if given an opportunity to become offensive.

In closing, I need to point out that this tactic has been made obsolete with modern all aspect heat missiles. The Air Force F-4E could not shoot the all aspect heat seeker, the AIM-9L. With this missile, you did not have to get behind your opponent to shoot. From any angle you can simply point at him and shoot. The only requirement is to be in range. This makes putting your nose in lag to get behind him unnecessary. As far as I know all US fighters currently have the AIM-9L or some other all aspect missile. But I am curious if any other F-4 pilots used my maneuver after I left the Air Force. I suspect not. I didn't receive one word of positive feedback on it.

Bunky's Last Flight With Me

My two last air-to-air flights bring back strong memories. The first one was with a less experienced pilot that lost in the air, but did his best to win in the debrief. It was really pathetic to watch. The second one, run by my former squadron commander, was against two F-16 and was a complete disaster for us – until the very last engagement.

The first flight was against a pilot named Bob Henry, we called him Bunky. He was less experienced than me but was the lead of this flight. We went to the warning area without incident and set up with him having the offensive advantage on the first two setups. I kept him at bay for the first setup until we ran out of energy at the bottom of the block – meaning we have bled off enough energy that our altitude was at the minimum allowed. The second pass with him being offensive was different. He pulled a lot of lead and was obviously going for a raking gun shot. Unlike a guns tracking solution, the best you can hope for was for the pipper to rake from the nose to the tail of your opponent's aircraft. I had developed an excellent counter, and like all great moves it involves forcing the opponent into making a mistake.

The classic counter for a raking guns shot was to roll 90 degrees to wings level and pull. This made the aiming solution move up. But if the counter was countered by going up also, a kill can still be made. I had developed an excellent counter to the counter to the counter. I rolled 90 degrees but I don't pull much -- just a head fake with a brief movement

of the stick to make the opponent think I was going up. As soon saw I see the opponent move his nose up, I pushed forward on the stick to maximum negative Gs.

As back ground to the move, negative Gs are rarely used in modern air-to-air combat. If you want to go down, you don't push. You roll upside down and pull. Negative Gs are so rare I often had back seaters complain bitterly that my negative G guns break caused their check lists and what not to fly all over the place. I would tell them they are in a fighter and not in a tanker. They should be prepared for negative Gs.

Bunky bit on my counter perfectly. I rolled 90 degrees to wing level and pumped the nose up for less than a second. I saw him roll and pull. Bam – my stick went almost to the forward stop and I went down. My back seater yelled in surprise. But it worked great. I saw Bunky fly past much higher than me. No shot at all.

Next it was my turn. The roles were reversed almost exactly. I had the offensive advantage at the start and I closed for a raking guns shot. Bunky was 100% predictable. He rolled to wings level and pulls. Even before he pulled, I was going high in anticipation of his counter. I did it perfectly. I pulled a little more lead to make less angles which would result in more bullets on target. I noticed I am going to pass a little closer than the 500 feet allowed. I considered aborting the pass, but I didn't. I really wanted this shot. I knew it was safe because his plane was moving forward relative to my wind screen. I knew a plane on a collision course stayed stationary on the canopy.

As Bunky's plane approached my pipper, I pulled the trigger. On a raking guns shot, if you wait for the plane to be under your pipper to pull the trigger it is too late and all of the bullets pass behind the target. But my timing was a perfect. I have bullets in the air as his plane passes in front of me. The gun camera would reveal the next day the pipper went right down the middle of his plane – it started at the nose and tracked to his engine nozzles.

We got back to the squadron and Bunky lead the debrief. He did his best to win the debrief. He claimed he countered my pull on his guns pass. When I told him I didn't pull but that I pushed, it doesn't matter. He claimed his pipper raked my plane.

On my pass, he claims his pull was effective and I didn't get off a shot. When I explained I clearly saw my pipper rake his plane, it didn't matter. He was bound and determined to not admit defeat in the debrief. I told him, "Bunky, my time in the Air Force is limited. It is not important for me to get better. But I am telling you that you didn't get me and I got you. We will have to wait until tomorrow to see the gun film, but I know I am right. I truly hope you are simply trying to win the debrief and you know you are wrong. It concerns me to think you think you are right when you are so wrong." He simply countered that he was right.

The gun camera film was developed overnight and proved my case. On his pass, I was not even in the field of view. On my pass, the pipper tracked from his nose to his tail. I didn't bother to talk to Bunky about the film. If he wanted to think he had won, I wasn't going to upset him with the truth.

My Last Air-to-Air Flight – Against 2 F-16s

I had an opportunity to fly with my ex-squadron commander, Colonel Short, just before I left the F-4 squadron. By this time Colonel Short had moved onto a job at the wing

level. We were practicing surge operation, which means each of us would fly three times a day – what we called triple banging. There was also a reduced time between flights.

All three of the flights were against 2 F-16s from a different base. The plan was we would meet in the warning area off the coast and take different sides of the area. With minimum communication between the two types of aircraft, we would declare "Fights on" and head toward each other and see who could shoot the other down.

The F-4 had the advantage of having a longer range missile. At the time of this flight, the Amram missile was not in production and the F-16 did not carry the radar guided AIM-7. The F-16 could carry the all aspect AIM-9L heat missile, but to even the odds a bit, we declared there were no AIM-9Ls and they only had AIM-9Ps that were tail only missiles. We also declared the F-16 would not use afterburner. This would make them bleed off energy at about the same rate as our F-4s in a turning fight.

Our plan is to shoot AIM-7s head on before the merge, pass head on with us in tactical spread, separate from the fight, pitch back into the fight and take another head on shot with our remaining AIM-7 missiles. Good plan in theory. If it works, we would avoid a turning fight where the F-16 is superior (we both knew the F-16 would cheat and use afterburners). The tactic would let us to use our advantage of having a head on missile, which in our scenario the F-16s did not have.

It didn't work out so nicely. If one airplane is fighting another airplane, the head on pass to separate works. By the time the enemy is turned around 180 degrees, you are out of missile range. But when 2 F-4s separated by one mile pass 2 F-16, at least one of the F-16 can lead turn at least on of the F-4 such that there is much less that 180 degrees of turn at the merge. This is exactly what happened 9 times in a row, and in the first 8 times, I am the F-4 that is attacked. The last fight was different and worked out much better for me.

On the first intercept, we got into tactical spread formation, fly toward the middle of the warning area and started looking for targets. We picked up the enemy aircraft and headed straight for them. Using our TISEO, we IDed the targets and shot one AIM-7 each. As the F-16s turned we turned to keep them in front for a head on pass. Since Colonel Short was the lead, he could insure a 180 degree pass with the enemy. I was number 2, so I couldn't turn to insure a 180 degree pass. On my radar I saw one of the two F-16s moving laterally and vertically to get turning room on me. I picked him up visually and saw he was lead turning me. I knew I would not get a clean separation. As the F-16 got close to the valid parameters for an AIM-9P missile shot – about 45 degrees off from the tail -- I was forced to do a break turn to stay alive.

I was on the left so I broke left. I broke away from my lead to put the plane attacking me between me and lead. The theory was as the enemy turns to follow me, Colonel Short would turn the same direction. In just a few seconds, lead should be able to kill the attacker. We did this 3 times the first flight, 3 times the second flight, and 2 times the third flight. But not once did Colonel Short kill the plane that was attacking me. I have no idea why not. Attacking a plane that is attacking a member of your formation is supposed to be an easy thing to do. I guess not for Colonel Short. He was a much worse at flying fighters that I had imagined.

After the first flight, while on the ground, we had a short time to talk about the next flight. I asked Colonel Short where he was when I turned away and gave him a classic

sandwich to kill the attacker. He didn't have a response. I then pointed out that a 2 ship of aircraft spread by a mile can not plan on separating after passing a 2 ship of F-16. One of the F-16 will have the angles solved before the merge and be in position for an immediate attack to the rear of us. He didn't listen. He insisted the plan will work. This brings to mind a definition of insanity, "Attempting to do the same thing over and over again and expecting different results". By this definition, Colonel Short was insane.

On the last intercept on the last flight, for the first time Colonel Short had an F-16 on his tail at the merge. I was on the left side and he was on the right side. He broke right to attempt to defeat his attacker. I rolled briskly right and pulled to 6.5 Gs – the maximum allowed with wing tanks. The second F-16 was spit out behind us and would not be a threat to me for a while. In a few seconds I was pointed at the enemy. In my sights I saw the enemy F-16 killing Colonel Short and the F-16 was in perfect range for an AIM-9 up his tail pipes from me. I pulled the trigger and called "Fox 2!"

I waited a few seconds and shot another heat missile for a valid kill on the F-16. Then I called knock it off. I couldn't wait to see the gun film. I planned to blow up this picture and frame it. In the view there will be an F-16 I am killing and also in the view will be my "favorite" ex-squadron commander being killed by the F-16.

The next day I got the film and put it on the projector to watch. All I see is blue sky in the field of view. I had forgotten that every time I pulled the trigger for a head on AIM-7 shot, the camera rolled. To make matters worse, we didn't get fresh film after each flight. I ran out of film before I took the tail-on AIM-9 shot of the F-16. I don't have the shot framed on my wall, but I do have it framed in my mind. To this day I can recall very clearly that F-16 and that F-4. It was a great memory to end my days of flying the F-4 Phantom II.

Driving A Tank

After flying the F-4 for three years I was offered a T-37. I turned it down and put in my separation papers. Because the separation was more than a year in the future, I could not avoid a one year tour as an Air Liaison Officer, ALO (pronounced a-low). I didn't fight the assignment at all. I was going to be based at Fort Hood, which is close to Austin, Texas. And more importantly close to The University of Texas. I needed this because I needed to complete my master's thesis. The Air Force had given me a one year delay after getting my commission and I had completed all course work for my masters in that year. But, I needed to complete my thesis and time was running out. The move worked. While doing my duty as an ALO, I completed my Masters in Aerospace Engineering.

I also liked the assignment because I was planning on working for defense contractors after I separated. A year working with the Army did help - it helped a lot. I ended up working for a company that did business with both the Air Force and the Army.

One thing that amazed me about the Army was how little they incorporated air power into their strategy. The most extreme case of this happened in the middle of a field exercise. The brigade headquarters was out in the field interfacing with the gamers in a gymnasium. In this mission we are simulated to be in West Germany and are being attacked by a superior force from the east. We are being beaten up pretty badly by a large number of enemy tanks. The referees give us a 4 ship of A-10's. The A-10 is a tank killing machine. It is equipped with a 30 millimeter canon that is deadly to tanks, it can easily kill 2 or more tanks per pass, and because it is slow it can make the 360 degree turn to make another pass in a few seconds. I jump out of my chair and ask the brigade commanded what targets he would like to have the A-10's attack. He gave me a dirty look and said, "Son, can't you see I am busy. Leave me alone and get a target from my artillery officer!" I couldn’t believe my ears. I showed up with the fire power to turn the battle around and I got chewed out for interrupting him.

There was one notable exception to commanders not using air power effectively. One day while on exercises in the field, a battalion commander calls me out to his position. He shows me a tree line and asks if I can target an air strike down the tree line at dawn the next day. He was planning a dawn attack, and wanted air power to create confusion and keep their heads down. I went back to my brigade headquarters and sent the request up the line. Being an exercise, we did not actually drop bombs, but it was nice to know at least one army commander incorporated air power into his plan.

This all happened in 1985, well before the first Iraq war. Air power was so effective in that war, I can only imagine army commanders today use airpower in their plan of attack.

While at Fort Hood, I had the opportunity to see many exercises in the training area. Fort Hood had two divisions based there. The 1st Calvary and the 2nd Armored. Both were armored divisions with mostly tanks. They had infantry to support, and all infantry had Bradley fighting vehicle to transport them. This made the units very, very fast. A typical exercise was over in minutes. The two units would charge at each other and one would win and the other loose in a matter of minutes, or even seconds.

Getting Control of Army Air Defense

My station as a brigade Air Liaison Officer, ALO, was in the brigade Tactical Operation Center, TOC – the command post. The TOC for a brigade was typically about 4 Armored Personal Carriers, APCs, backup to a common area and a large tent covering the common area. This way the radio and equipment of the APCs could be accessed easily.

My desk was set up between the artillery officer and the air defense officer. On my first exercise we had a 2 ship of F-16s show up to give tactical air support. I had no need to talk directly to the planes. That was the job of the Forward Air Controller, FAC. As the F-16s were approaching our airspace I turned to the air defense officer and asked him to get the word out to all of his people that 2 friendly F-16 were coming into our area. He told me he would tell every one of his guys that had a radio. I asked for clarification on which air defense assets had radios. It turned out that many of his Stinger missile teams didn't have radios.

I made it a campaign of mine to change this. When a friendly airplane entered our sector, we needed to let anyone that could shoot down a plane know about this. After some effort, the Army started supplying the Stinger teams with a portable radio. This made me sleep better at night.

The second problem I fixed with the air defense guys was their use of the Identification, Friend or Foe, IFF, gear. The Army thought the equipment was infallible. If it didn't come back as friendly, it was a Foe. This was not correct. I trained them that the IFF equipment was not well maintained and some of our European allies didn't have any IFF on their planes. I went on a speaking tour to the air defense units. The theme was: IFF friendly is a friendly, but not getting back a signal from a plane did not make him a foe. It made him an unknown. There was the possibility he was actually a friendly without functioning IFF equipment.

I also came to realize their training for visual identification needed some work. The problem was a limited number of photos the air defense guys used for training. Basically the guy were just memorizing the individual pictures more than learning to recognize the different types of aircraft as friend or foe. They also had no pictures of non-U.S. NATO aircraft. I contacted some old air force buddies and got a copy of a large database of pictures we used in Air Force training.

Colored Smoke from the 4.2 inch Mortars

Based on my own experience flying, I realized a major reason for not killing the target from a plane is because the pilot does not see the target. This problem is greatly aggravated in the close air support mission. In this case the target may be a bunch of infantry in a tree line. There is no way to ID a group of infantry or even armor from a fighter aircraft.

Due to my close proximity with the Brigade artillery officer in the headquarters tent, I came up with a plan to help my fighter aircraft find the target. The solution was to have the 4.2 inch mortars fire colored smoke at the target. The 4.2 inch mortars were owned by the brigade, but considered too small to do much good directly with their rounds. I found out they could shoot colored smoke and they were very accurate. This way the army's artillery

system could be used to put a smoke round where they wanted the air force to hit. All my fighter pilots had to do was hit the colored smoke.

I went on a campaign to talk to all of the 4.2 inch mortar teams in the Corps. They all loved this mission. It gave them an important task to add to the list of things they could do. The idea that due to their efforts the large bomb payload from the close air support aircraft would land on target gave them great pride.

Wartime De-confliction of Air and Artillery

I changed combat doctrine in the how we made sure friendly artillery didn't shoot down friendly aircraft. When I started my job as a Brigade ALO, the doctrine was too conservative. The plan was to block off a huge bunch of airspace that would have no artillery fire at all as long as a friendly plane was in it. Because modern fighter aircraft are so fast, they take a lot of room to turn – a LOT of room.

For all practical purposed the airspace required was the entire area over my brigade. There could by no artillery fire from any Brigade artillery while friendly aircraft were attacking targets in our area. This made the Brigade not want any air support. They believed the firepower from all of their artillery for that time would be more effective than the firepower from the friendly aircraft. I came up with a better plan that was simpler to implement and didn't shackle friendly artillery so badly. The plan was to only de-conflict friendly artillery impacts from low flying friendly air. I did some calculations with probability theory and came to the conclusion the risk of a friendly artillery shell hitting a friendly airplane was close to zero.

We did keep the doctrine of no artillery at all during peace time. The acceptable risk of hitting an airplane is very different in combat than peace time training. Not to mention turning off friendly artillery in peace time has no risk of loosing a life -- while in combat, turning off artillery adds great risk of loosing friendly lives by the threat that is not neutralized or destroyed by the artillery.

National Training Center

National Training Center, NTC, was the Army's equivalent to Red Flag. Units were sent there to fight against an aggressor force that was trained to fight like Soviet forces in Europe. As happens in Red Flag, early in the training the friendly forces typically do poorly, but over time at NTC, performance improves. The case of my brigade was no different -- the first two days were complete disasters, but the units learned from the training and did much better. I guess that is the point of such training. If we don't see improvement, the training was a waste of time.

The first night of training was a mess. The second night was also a mess, but a little bit better. After that the brigade did better, much matter. On the first night the problem was to move about 15 kilometers, "clicks" as we called a kilometer, and take an objective. The plan was to move the 1st company out then about 30 minutes later move out the rest of the brigade. The idea was for the first company to be a reconnaissance force and the rest of the brigade to be the real fighting unit. The problem of this night, and the next, were mainly in the form of navigation. In training at Fort Hood, everybody learned the local training area very quickly. Only a new person needed to look at a map. Because the unit trains in the same area time after time, all of the local landmarks became familiar.

While training at the NTC, the terrain was unknown for the first time. Add to this, the people are not well trained on map reading, using a compass, or an odometer. The first company that moved out navigated so poorly they made a big circle. I don't understand this. The stars were out; there were many compasses available to look out. But for what ever reason the first unit made a complete circle and didn't know it. To make matters worse, the first unit ended up behind the second unit without knowing it.

The first unit still thought they are in the lead. They picked up a unit in front that had armored vehicles. They assumed the unit they were looking at was the enemy. They opened fire on the unit if front of them. The unit in front realized they were taking fire from the rear. They couldn't explain how the opposition force got behind them, but felt compelled to defend them selves. They returned fire.

The laser designator Miles system scored hit after hit. One thing the units were good at was gunnery. The M-1A Abrams tank and the Bradley fighting vehicle both have thermal sights that work at night and very accurate fire control computers. The effect was devastating. Before the fighting was over, both sides were reduced to less than 50% strength – without the enemy firing a single shot.

The next night was better, but not much. Rather than have a company move out as a recon in force, the brigade moved out in mass. The object of victory was the same as the night before – take an objective that was 15 kilometers away. At least this time the unit did not do circles. They moved to what they thought was the objective and stopped. In reality, they had only traveled about half way to the objective. Needless to say they were surprised they didn't meet any of the opposition force on the way. After sitting for a couple of hours, they realized their mistake and moved out again. Once again they came to the conclusion they were at the objective, but like the first time were confused about not encountering any of the enemy. They finally concluded they were not to the objective. But it was now close to dawn. They decided to wait for day light before they move forward.

Mean while, it turned out the unit had stopped about 2,000 meters short of a line of opposition tanks that were in defensive positions – the tanks were in holes in the ground or behind built up burms. Only the top of the turrets were exposed to shoot at. The friendly forces had no idea they were so close to the enemy and worse yet, they didn't know they were sitting in the open to enemy fire. The opposition force knew the U.S. force had the ability to listen to radio traffic, so they were operating with using runners and hand signals. When they saw the U.S, forces in the open and in range, they used a runner to pass the word down the line to open fire at a certain time. The plan was devastating. The opposition force caused about 50% causalities with the first volley. The U.S. forces were left without a clue what was happening until it is too late. The enemy only had the top of their turrets exposed and even then it took precious time to locate the enemy. Once again the U.S. force was annihilated. But this time at least the enemy did the killing and some of the enemy was killed.

This was the last night for disaster. The U.S. units were getting a feel for the terrain and how to use a map and a compass. This was the last of the navigation disasters. It is interesting to note that with GPS in use today, navigation is never a disaster. Modern GPS receivers that are widely used and do all of the navigation for the crew.

Rain dump and low visibility on Cross Country

While I was working at Rockwell Missile Systems in Atlanta Georgia I bought a 1946 Taylorcraft. This plane is a first cousin to a Piper Cub - it is covered in fabric, has a 65 horsepower engine, and has no electrical system other than the ignition. The main differences between the Taylorcraft and the Cub were seating arrangement, speed, and fuel capacity. The Taylorcraft is side by side seating, goes about 10 miles per hour faster, and has twice the fuel capacity - 24 gallons vs. 12 gallons. These differences make the Taylorcraft a much better cross country aircraft.

When I moved from Atlanta to Texas, I flew commercially one way back to Atlanta to pick up the Taylorcraft. Because I had no radios, I had to rely 100% on my compass, my watch, and my maps for navigation. This was no problem, because I have an inherent talent of matching the map to the real ground. While this skill can be developed to a large degree, it is probably to an even larger degree either a skill you have or don't have in your genes.

On one leg, I knew I would certainly have to stop short of my designation because I was flying into a front that was producing a line of showers. As predicted, as I approached the front from the east, I saw the line in the distance. I picked an airport short of the front and decide to land there and spend the night. I am under a solid overcast at the time with good visibility. Unfortunately the clouds above me suddenly start dumping rain, a lot of rain. This causes the visibility to drop to about one-half of a mile, maybe less. The regulations require 1 mile visibility at the altitude I was at. I put the plane immediately into a 30 degree bank turn and make a 180 degree heading change to get out of the rain. The visibility is so low, I realize I may not see a tower in time to avoid it. I am about ready to start a climb into the clouds to make sure I don't hit a tower.

But, then I spot a road headed approximately back east. I come up with a plan. I know a tower will not be placed on a road. If I fly directly over the road, I will be safe from hitting a tower. I like this option better than climbing into the clouds. The only gyro I had was a turn needle that moves to indicate turn rate. While in the days of Charles Lindberg, a turn needle was all that was needed for instrument flight, but a turn needle is not even close to being as good as an artificial horizon that all modern instrument aircraft have today. The second problem with flying into the clouds is how to get out of them. I knew the cloud deck continued for many miles to the east.

My plan worked great. I follow the road to the east until I get out of the rain. I was greatly relieved to see the visibility improve. I land at Tupelo Mississippi and spend the night.

I Start at NASA – Copy Machines and Transparencies

The next day I make it to Houston, and I walked onto Johnson Space Center. I was 6 years old when John Glenn orbited the Earth and from that moment I have dedicated my life to manned space flight and the defense of my country. My military work started out as a "training school" for manned space flight. I left military service in 1985 and I was offered a job as an astronaut instructor. But, I was convinced by a brilliant man that latter became my mentor, manned space flight was a moot point if the Communist took over the Earth. I agreed with him and delayed my entry into space flight to help fight the Russians as a design engineer for guided missiles. I guess I did a good job. In 1990 peace broke out and I could with a clear conscience stop designing machines to blow up and kill Russians and build machines to take us into space.

I recall so clearly my first unescorted walk through the floor that held the astronauts. I was in heaven. I didn't talk to anyone. Just the fact that as part of my job I could walk up a couple of stairs and be in their hallway was so thrilling. I rededicated my life to getting us off the planet Earth before the Sun goes Red Giant. I am still dedicated to this principle.

So far so good, but I hit a major snag early -- making viewgraphs. In my job from about 1985 until 1990 I was largely a "salesman of weapons of mass destruction". I don't say this tongue and cheek. I was great at probability theory, a better than average fighter pilot, well versed in ground and naval warfare, and an excellent presenter. I would do analysis, put the briefing together, and help show our customer how good our "weapons of mass destruction" were. Early in my career I did agree that one attribute of our competitor's system was better than ours. After the customer left, my boss told me "Don't ever give in an inch. Our system is better than theirs in everyway."

The big boss was in the room and disagreed, "Danny's honesty is going to help us out. We overall have the better system, but when he agrees that we can't do everything for everyone our customer will trust him. They will realize if Danny says our bomb will do something, our bomb can do exactly that."

This honesty served me well until I came to NASA. It is my opinion if you don't lie at NASA you will not get ahead. I have said several times to many people, in public forums, "Do you know what a meeting of NASA managers is? It is a bunch a people in a room lying to each other." NASA is much better than it was, but it still has a long way to go.

As a "bomb salesman" I made literally hundreds if not thousands of transparencies using a copy machine. I had been doing this since 1985. You open up the drawer of the copier, put in the transparency film, put your work in the feeder and hit "Start". As fast as the machine can run you get transparencies.

At NASA I was an astronaut instructor at first. We made LOTS of transparencies. This was before Power Point. NASA did not use copy machines like the rest of the world. NASA used a thermographic machine to make transparencies. It was purely and simply like chiseling messages on a stone tablet when compared to using a copy machine. First you had to make copies on a copy machine, because the process took most of the ink off of the original. Then you had to carefully put the original and the blank blue sheet together and feed them one page at a time to a machine that used heat to transfer the ink to the blue sheet and make a transparency. It was really, really, really slow. The quality was also horrible.

You couldn't use a regular size font, because the resolution was too low. Graphics also came out looking horrible.

"This will be so easy", I thought. I am working for the same people that took us to the moon. As soon as I get the word out how to use a copy machine and save lots and lots of time – I will be a hero. Not so easy. I didn't know I was working for an organization with a narcissistic management system. I didn't know about the term "narcissistic" at that time because NASA had not driven me insane yet. Later they would literally drive me insane and to overcome my insanity I have extensively studied mental disorders. One key attribute of narcissism is a complete lack of ability to say you are wrong. I am not even talking wrong about major issues. Narcissists can't admit the slightest mistake. It is essential that everyone think they are perfect. NASA management is BIG TIME narcissistic. I think this narcissistic trait is what was highlighted as the problem with NASA culture in our two fatal accidents. Engineers are afraid to speak up for fear of retribution from management.

I went to the secretary and asked to order some transparency film for the copy machines. My first nightmare started, "You can't use the blue film in the copy machines."

"I know", I said. "I don't want to use the blue film, it is obviously way too thick and stiff. I wish to order the film that is designed for copy machines".

"They don't make film for copy machines. You have to use the thermographic machines. Call Shirley Dorsey. She is in charge of office equipment."

This will be easy I thought. As soon as I explain to Shirley I have in my other job made hundreds if not thousands of transparencies in a copy machine, she will gladly order the correct product and we can save lots of time and money. I told Shirley "I have only been here a few days. In my last job we used copy machines. They operate much, much faster and make a better copy. We just need to order the correct product and we will be set."

"Well we must have a different type of copy machine, because your machine will not make transparencies," Shirley replied.

I am starting to realize NASA is "different" but I have not lost hope yet. I tell Shirley, "I have been making transparencies for many years in many different copiers. I used to travel with many blank transparencies in my brief case to make them at a moments notice on travel. I was not the only one. This was common practice. I have in all of my travels never heard of a copier that can't make a transparency. We just need to order the right product".

"You didn't hear me, your copier can't make transparencies." I was starting to look for Rod Serling and listen for the theme song from the Twilight Zone.

I decided to compromise and agree with her, "OK, I understand this model for some reason can't. How about a different model somewhere else on site? What models do we have elsewhere?" This is where I was first introduced to the time honored tradition at NASA – If you get painted into a corner, just tell a big fat lie – Make up what ever you need to win the argument.

Here is what she said "None of the copy machines at Johnson Space Center can make transparencies." I knew she had just made this up on the cuff. I knew further discussion was pointless. My first taste of NASA narcissism was giving me heart burn.

I thought our machine looked like the machine I had just been using at General Dynamics Fort Worth. I got the make and model off of the machine at NASA – an IBM Model 70. I called a buddy of mine back at the Old Fort Worth Bomber Factory and asked about the copier in our office space – an IBM Model 70. OK, A SLAM DUNK!!!! Same make and model as what I have at NASA. How can Shirley fight this evidence? I was just about to get a strong dose in how sick NASA was and to a lesser degree still is – FACTS DON'T MATTER – AFTER A DECISION IS MADE, ALL DISCUSSION IS STOPPED. And all discussion was stopped. I talked to the Ms. Dorsey and told her this new piece of information. Our copier was the same make and model. I even had the specs on the type of transparencies needed. This is where I found out the real problem. "Mabel is the secretary for Mission Operations Directorate and she has forbidden the use of transparencies in copy machines. They get stuck in the machines and make a mess"

"OK I said. This must be based on someone using the blue, very thick, thermographic transparencies. Let me talk to her and I will tell her we can save lots of time using copy machines. Those thermo machines are obsolete."

"You don't understand. The decision has been made. We don't use copy machines to make transparencies."

"Can I talk to her?"

"No, she is too busy."

Let me interject here. I have met Mabel. She is a lovely lady. She is a great lady. She is always nice and kind to me. Basically, I love her dearly. I have no doubt if I had been granted an audience with her in 1990 about the transparencies and presented my case, in about 10 seconds she would have been on the phone ordering boxes and boxes of transparencies for copiers. But as it was and as it is, once management makes a decision -- that is it. To make the slightest effort to change the decision is lethal to a career at NASA. I have sacrificed my career and even my sanity it turns out to try and change management decisions at NASA.

OK I thought, I will go to my management. My management balked. They agreed with everything I had found out, but refused to raise a finger. They agreed many, many man-hours were being wasted and believed in my statements on the correct use of a copy machine to make transparencies. I was appalled they would not lift a finger to implement the more efficient process for their office. I realize now why. At NASA you don't make the slightest hint of "rocking the boat". Even if your idea is positive, if it has the slightest hint of asking management to change a decision, you stop. Even the slightest hint of "rocking the boat" causes the complete destruction of a career at NASA. From that point on everything you do is wrong and NASA management will use every tool at their disposal to reprimand you. It is also impossible to recover. I don't blame my managers to fear the simple step of using copy machines to make transparencies.

I get a copy of the Johnson Space Center office supply catalog. I find a transparency to use in laser printers. I order a box. They work great in the IBM Model 70 copiers we have. I start an "underground resistance" in the training division – order the laser printer transparencies and use them in the copies.

I got quite a following. The copy machines were literally about 10 times faster and made a much better copy. But we started to get caught. We would present our high quality,

clear transparencies to our classes instead of the blurry blue ones. I was questioned on if I was breaking the rules on the use of copiers. I learned I had to hide the truth at NASA to survive, "Of course not, I made these on the laser printer".

Finally I am called in for the "big questioning" by Ms. Dorsey. I confess. She finally agrees to the overwhelming evidence our IBM Model 70s can make transparencies, but she tells me the laser printer film is too expensive and I need to go back to the lower cost hand fed system. I ask if the cost includes man-hours spent hand feeding the sheets one at a time, vs. a single push of the button. She tells me to stop making trouble and it doesn't matter. NASA has the funds to pay an engineer to hand feed the old way, but not the money to buy the higher cost copier machine product. I agree to "stop making trouble." This lasted for a couple of days.

As an engineer I started wondering about the cost. The blue film is much thicker than the copy machine film. My estimate was it had at least 3 times the amount of plastic. Also, I had traveled many, many places and all I had seen outside of NASA was the copy machine film. I came to the conclusion that based on the amount of material used and mass production potential I had been told a "non-truth" about the cost of the films. I have learned this is the way NASA management works. If you are the superior person in anyway, you can simply make up lie after lie to force the decision you want. You are immune from repercussion because if anyone calls you a liar, you then lie to the local police and psych wards and have the person locked up for weeks, declare them homicidal and destroy their career. Apparently NASA even has the power to convince a local judge to perform judicial misconduct to have us not get a hearing or an attorney. A great system to allow people in power to lie. Unfortunately for me, I didn't learn the system in time to save my sanity from their abuse of power.

I got out the supply catalog. The blue thermo sheets cost about $20 for a box of 50 and the clear "laser printer" ones about $12 a box. OK – ANOTHER SLAM DUNK. It hit me that I might have a cost saving suggestion on this. We must use lots and lots of boxes of this stuff at Johnson Space Center. I called and asked the number of boxes of the expensive stuff we use. It was a lot. I put in an official cost saving suggestion to convert from the expensive stuff to the cheap stuff. I didn't even include the savings in man-hours to not have to feed the old machine one page at a time. My 10% was $4,000. I was looking forward to buying a used boat to run around Galveston Bay. The official response from Shirley Dorsey comes back. "This is not a savings, we have always used copy machines to make transparencies". I will not go over the details of my appeal process to get my "boat" money, but even after getting 3 witnesses in my behalf, I did loose. In retrospect I understand. The people doing the appeal knew as everyone but I knew – don't buck the system at NASA. I didn't buy my boat. We continued to use the obsolete blue hand fed system for about 5 years. Finally, the manufacture pulled them off the market because nobody else was using them. I should have learned my lesson and learned to shut up. But I came to the conclusion NASA management was the number one reason NASA was so bad. I decided to do my part to help fix it. I can say in retrospect I failed completely in attempting to make NASA management better.

Manual Separation and RTLS

Early in my career as an astronaut instructor, I had a run-in with a pilot-astronaut. His name is Curt Brown. He is one of the most arrogant and difficult to get along astronauts

in the program. Unfortunately, I didn't know this during my first training session with him as a student. The training team planed for a Return To Launch Site, RTLS, abort by killing an engine shortly after lift off. As expected, there would not be enough power left in the remaining two engines to make it to an abort orbit, or even to get across the Atlantic and land in Europe or Africa.

I had decided to train a Flight Rule I had recently read. If on an RTLS and control is lost shortly after the main engines are turned off, the crew will command a fast separation. I was new to the field of training astronauts, so I thought they would know to do this task. I could not have been more wrong.

The rule was written because on an RTLS abort, the shuttle is in significant atmosphere at the time the engines are turned off. It turns out the shuttle with the tank on is unstable, but in trim if the attitude is kept close to the desired zero sideslip angle and -4 degrees angle of attack. The only devices maintaining control are the small Reaction Control System, RCS, jets. If the shuttle moves very far from its trim attitude, the air loads will overwhelm the control available and the stack will tumble. If this process starts, the best choice is to get off the external tank ASAP. After separation, the orbiter by itself is stable and the flight control surfaces become active.

I had to do something to cause the combined orbiter and tank to go out of control right after main engine cut off. I used some time in the simulator by myself to figure out a way to do this. I came up with the amount of force to apply, the direction to apply it, and the duration to apply it. It worked in the simulator. If I applied the force as soon as the engines turned off, the stack would go out of control, but after the manually commanded separation, the shuttle would regain control.

I briefed this to my team lead and got permission to try it in the training session. I kill the engine shortly after lift off and the crew goes RTLS at the correct time. The powered flight portion of the RTLS is flown without incident. As soon as the main engines are turned off, I put the force in. It did not work as planned. Control is lost as I expected, but rather that perform the fast separation as called in the flight rules, the crew engages the Backup Flight System, BFS. To make matters worse, there is a known bug in the BFS that if it is engaged in this time frame, it gets lost on what mode it is in and it will not separate from the tank. Needless to say, entering the atmosphere while still on the tank is a disaster. The rest of the training simulation was a disaster. The shuttle tumbled and tumbled. We finally declared the crew dead and stopped the simulation.

Curt Brown was furious. In the debrief I showed him the flight rule that says the crew should perform a fast separation in that phase if control is lost. Curt had never heard of this. I thought it strange that a flown crew member would never have been trained on such an important rule. The next day I asked Andy Foster, the lead instructor on ascent aborts, about this rule. Andy informed me this was a bad rule and it should not be trained. I was stunned. How can we have an official policy to not train a flight rule? The flight rules are the bible of operating the shuttle – for both the crew and the flight controllers. I also argued that BFS should certainly not be an option in this phase if it is known to be catastrophic to engage.

My complaints fell on deaf ears. Everyone more senior than me was comfortable having a rule on the books that "everyone" knows we should not follow. Everyone was also

comfortable not training the crew engaging the backup flight system in this phase – even though it is known to cause certain loss of orbiter and crew if they do engage.

Entry Guidance Work:

One of the first classes I took was "Entry Guidance". I loved it. I love new and different technical material. I will attempt to not get too technical, but in a nut shell, Entry guidance flies the shuttle from the time the shuttle first gets in the atmosphere until Mach 2.5. Before this point the shuttle flies like a satellite – no effects of the atmosphere. At Mach 2.5 it behaves as an aircraft. From Mach 25 to Mach 2.5 the shuttle transitions from satellite laws of motion to aircraft laws of motion. I took the class, I read the book, I flew the simulator with an instructor. At the end of these classes I knew I didn't know what was happening to the shuttle. I had been taught to memorize some key phrases, but that was about it. My mind became obsessed with what a pilot-astronaut needed to know to operate the shuttle in this phase of flight. I don't consider myself in many ways all that smart. I can't spell, I can't do mental math. But, when my mind gets on a technical problem and will not let go. This sounds weird, but I literally dream about technical problems. When I shave and shower, I think about the problem. As I drive to work I think about the problem. As I watch TV, I think about the problem. This is why I didn't have to study much to take my finals. I don't need to sit in front of a book to "study". The problem consumes my mind 24 hours a day until I solve it. After about 6 months I started to come to grips with the problem of Entry Guidance. It is really not that hard, but I had to think about it for a long time to come up with the simple solutions I came up with.

Our class was obviously written by an instructor that read the complex flight software documents and wrote about the details of the flight software. It had little to do with flight dynamics as a pilot sees them. For example, the class spent a great deal of time going over what phase the guidance flight software was in. Important information for the software guys – useless information to the pilots. The Shuttle cockpit displays don't even let the pilot know what phase you are in. I decided to drop this from the class when I got the chance. Second the primary flight display on entry, places an "orbiter bug" based on current range and current velocity. There are lines of drag on the display. I was taught to interpolate between the lines and you would get your current drag. I realized this was wrong. You can be at 1,500 miles away going Mach 20 – but at 400,000 feet and have very little drag. You can be at 1,500 miles away going Mach 20 – but be at 120,000 feet and have lots of drag. The orbiter bug in both cases would be on the same place on the display and looking at the drag lines would give the same drag. I did some research and realized the display was not giving current drag but desired drag – the drag you need to fly to get home. Too little drag and you would over shoot the landing site. Too much drag and you would land short or burn up.

I had my first opportunity to "fix the system" with a brilliant pilot named Charlie Bolden. I was not even his official instructor. I was the instructor trainee. My training mentor was named T.Q. Tran. A wonderful lady that knew flight dynamics was not her strength. She asked me to teach Charlie his Entry Guidance class before his third flight. I was thrilled. I put a class together just for him. We met in his office. Charlie had never seen me in his life. Very early I told him "The orbiter bug position gives you your desired drag." I knew this would get his attention and I was right.

He stopped me right way, “Danny, the orbiter bug is your current drag. This is my third flight and I have always been taught the bug is current drag.”

I told him “I know you have been taught that, you have been taught wrong”. After some discussion I convinced him I was not crazy and might be right. I told him I knew I was revolutionizing Entry Guidance training and I needed some time and a lot of coordination to get it taught right. It took me about 2 years but I finally changed the class to teach the astronauts the correct use of the display.

The Shuttle Lands Short of the Runway

About a year after my first Entry Guidance class, I became the Entry Training Flow Supervisor. In this position I was overall responsible for training the crew for the entry phase of flight. In this context, entry is all the way from the end of the deorbit burn to landing. Within days of my taking over this job, a shuttle landed short of the runway. Fortunately, the landing was on the lakebed and Edwards Air Force Base, where landing short is not a problem. If the landing had been at Kennedy, we would have lost the orbiter and the crew.

The short landing was a classic case of a chain of errors. In aircraft accidents (in this case a very close call) there is almost always a chain of events. If any one link in the chain was not made, the accident would not have happened. It is very rare that a single event causes an accident. The short landing of STS-37 started with the weather. The winds at the time of landing were the strongest the shuttle had every flown in. This was true for the high altitude winds as well as the winds on the surface. The original plan was to land on the concrete runway, which has the Microwave Landing System. A helium filled balloon was launched at Edwards. A radar on the ground tracked the balloon on its ascent. Based on the motion of the balloon, winds at altitude were calculated. This data was fed into a computer simulation of a shuttle entry. Based on this simulation, the shuttle was predicted to be low on energy as it rolled out on final, but it will make the concrete runway OK. But then the surface winds pick up and the concrete runway is out of cross wind limits.

Wayne Hale was the flight director and he made the call to land on a lakebed runway that is pointed into the wind. Unfortunately, there was not enough time to run the simulator through the expected winds to make sure the shuttle will be OK. At the time of the flight there was no rule to do this. The rule is in place now. If the rule had been in place at the time, the landing wouldn’t have been attempted. A post flight run of the simulation showed the shuttle being very low on energy as it rolled out on final.

Meanwhile a heavily modified Gulfstream aircraft, called the Shuttle Training Aircraft – STA, makes an approach to the lakebed runway. The pilot reports a massive wind shear at 7,000 feet on final. The winds are such that 20 knots of precious airspeed is lost at 7,000 feet. This important call was made to the ground and discussed at length in the Mission Control Center. But for some reason, Steve Nagel, who was the commander of STS-37, was not told about the wind shear. We now had in place at least two links in the chain.

Steve and his crew performed the deorbit burn and let the computers fly the shuttle down to Mach 1. At this point Steve took over. Unfortunately, Steve had to fly a right hand turn to the lakebed runway. He had been scheduled for a left hand turn on the concrete runway, so almost all of his training was with left hand turns. The flight director needles

commanded him to start his turn, so he did. Now Steve made a mistake. He was so interested in finding the runway early he started to look outside. Because his seat was on the left, he couldn't see the runway until very late. Meanwhile, the shuttle flew into a tail wind and commanded Steve into the maximum bank allowed – 60 degrees. Steve missed the command and maintains the more normal 45 degrees. Without knowing it, the shuttle was flying wide and losing energy fast.

Finally Steve picked up the runway. He knew immediately he was in trouble. He was low energy. He rolled out on final with less airspeed than he should have. He thought he was OK, and based on the information he had at the time he was. But then he hit the wind shear and lost 20 knots of his already too low airspeed. Steve knew immediately he was not going to make the runway. He drops the nose to get back his airspeed. This put him too low to make the runway, but it was better than running out of airspeed while still in the air. He planned to land on speed, 195 knots, but well short of the runway. As he approached the ground, his velocity vector was telling him he was going down too fast. He pulled up in response to this indication from the velocity vector. It turned out the velocity vector had a significant error because this lakebed runway has no MLS.

Steve ended up landing at 165 knot airspeed 1,600 feet short of the runway. Everyone thinks he was slow because he was attempting to make the runway. I thought this for about a year. I finally had a chance to have a one-on-one interview with Steve where he told me this story and straighten me out on why he landed so slow.

It is hard to believe we were doing such a bad job of teaching the manual phase of flying from Mach 1 to rolling out on final, but we were. The pilot usually takes control at Mach 1 on entry and hand flies the shuttle the rest of the way. This is about 50,000 feet altitude. We had in the training flow a single class in the simulator to teach this phase. A big problem was the flight director needles were turned off during this class and the student did a 100% manual flying task. This is not the way the shuttle is flown. The flight director needles are on and used extensively, but the pilots had zero training on how to use the needles. Even worse, this phase was not trained as the pilots came out of the pilot pool and were trained to fly an assigned flight. It was common when I took over for the pilots to not have taken this class in many years.

One of my first duties as Entry Training Flow supervisor was to upgrade training of this important task. First of all I added a 4 hour class to be taught every time a crew was selected for a flight. Second I modified the class to have the flight director needles on during the entire class. If the crew had needles on the actual entry, they were going to have needles on during the class.

As I was developing this class, many pilots told me based on landing the Gulfstream aircraft modified to fly like a shuttle, the needles failed a lot. I did some research. The Gulfstream can't go to 80,000 feet to do an entire approach. Typically they go to about 20,000 feet and fly the last portion of the approach. Many times the needles go "goofy". I worked with the Gulfstream instructors and finally came up with the answer. The Gulfstream at 20,000 feet is going much slower than the shuttle would be at this altitude. The shuttle software "gets lost" and thinks the pilot wants to make another complete circle before landing. The commands to the pilot via the flight directory needles become completely unusable. If the pilot were to follow the needles, the shuttle would crash. Based on this, the pilots had lost confidence on the needles. I worked with the Gulfstream

instructors and we were able to increase the speed a bit. Safety considerations would not allow them to fly actual shuttle speeds. But I did get them to teach the needles often going "goofy" would happen very rarely in the real shuttle. We have had no more problems in this phase after my training changes were put into place.

We Go to Ben Guerir When It has a Thunderstorm

I found another problem with a flight rule. That is the status of a Trans Atlantic Landing, TAL, site if it has bad weather. It becomes an Augmented Contingency Landing Site, ACLS. The theory of the ACLS is it is first priority if more than one engine fails and the shuttle can't make it to a single engine out abort site. For example the rules state we would land at an ACLS before we would land at an Emergency Landing Site, ELS, or even before we would throttle up to abort throttles to make an abort to someplace other than the ACLS. The rule was obviously written for bad weather in the form of low ceiling and visibility, and not for thunderstorms, high winds, icing, etc. You see, with the Microwave Landing System, MLS, the shuttle can land without seeing the runway at all. But if the winds are extremely high the shuttle can not safely make a landing.

I make my case one day. I make Ben Guerir have the worst weather I can think of – severe turbulence, severe icing, winds 45 knots gusting to 65 knots, and golf ball size hail. The Flight Dynamics Officer, FDO, calls Ben Guerir go for an ACLS and picks a TAL site with better weather. The stage was set. I killed two engines at exactly the right time. If we would throttle up to abort throttles, we could make orbit. But, as the rules say, FDO aborted TAL to Ben Guerir. All was well until the shuttle ran out of fuel as planned and has to glide to its landing site.

The Flight Director looked at his weather sheet and was amazed. He calls on the Flight Loop, "FDO, Flight. What is going on? Why are we going the Ben Guerir with this bad weather? Why didn't we go somewhere else?"

FDO answers, "Flight, FDO. The rules call that an ACLS doesn't have any weather requirement."

Flight counters with, "I don't care what the rules say, it makes no sense to abort to a site with this kind of weather. We certainly can't land there."

But, I had given FDO an out. He had a couple of Emergency Landing Sites with good weather. In retrospect, maybe I was too easy on FDO. Maybe I should have trashed the weather at the Emergency Landing Sites that we could have made. If I recall correctly, there were only 2 of them. As it was, we picked an Emergency Landing Site with good weather and landed without incident.

FDO wrote an email and complained about training weather cases in simulation training. He claimed the rules are the rules and training to them was not appropriate. I think he was just trying to save face. It didn't work well. I sent a note that for two or 3 engine out scenarios, the weather rules are complex and can not be blindly followed. I pointed out in my years of flying aircraft, I gleaned a lot of respect for the amount of judgment calls needed to work weather issues. To this day, weather issues are trained and the flight control team is taught to not blindly follow rules if the weather is doing something unusual.

We Attempt Landing in Very Low Ceiling and Visibility

My next weather story is just as interesting as the abort to Ben Guerir in the very bad weather. It is based on there not being any minimum ceiling and visibility requirements to go to an Emergency Landing Site, ELS, if more than one engine fails. This was a hole in the flight rules because the Emergency Landing Sites don't have a Microwave Landing System, MLS. Without an MLS, the shuttle can not autoland and/or land in very low ceilings or visibility. The navigation aid in this situation is only TACAN, and not accurate enough to get the shuttle to the runway by itself. Keep in mind that at this time, there was no GPS on the shuttle and even then, GPS by itself is not good enough to land on a runway without the crew seeing it.

I started to give the flight control team lower and lower ceiling and visibilities at an ELS, then kill two engines and have the shuttle go to the site with bad weather. I carefully monitored the back room voice loops of the Flight Dynamics Officer and the Guidance Procedure Officer. I was listening for any indication they are aware the crew is about to attempt a TACAN only approach to a runway they will not be able to see until the last minute. One day the ceiling was 3,000 and 5 miles visibility, then I made in 1,500 and 3 the next day. Finally I made it 1,000 feet and 2 miles. Low enough that there would be a good chance the crew will not be able to correct for the TACAN errors after they see the runway. Unfortunately, the simulator the crew was in didn't have a visual representation of a runway at these ELS airports, so we didn't exercise them landing there without an MLS.

I finally asked on the voice debrief loop what the minimum weather was for attempting a TACAN only approach. The alternative would be to bailout while still at altitude. I got an answer I didn't expect. FDO covers his lack of interest well. He says to land or bailout is the shuttle commander's decision. Based on my job to train commanders and pilots it was not. It was simply never thought about until I brought it up.

Training vs. Flight Controllers:

I was hired by the training division to help strengthen the position of training at NASA. I did this job well. I did my management's bidding, but often butted heads with the flight controllers and their managers. I didn't make many friends with the managers in the flight controller area. That was OK. I didn't work for them. Unfortunately, NASA contracted out the training jobs and I went to work for the flight controllers. I told them I realized that we had butted heads in the past, but at the time I was doing the bidding of my training managers. This didn't work. I was given menial jobs for my year or so there. I did everything management asked for and did it without complaint. Yet I was called a "loose cannon" over and over. Management agreed my current conduct was good, but I was a loose cannon while I worked in training. Numerous conversations about me doing training management's bidding a that time did no good. I had butted heads with them when I was an instructor and they couldn't get over it.

I was put about number 4 on the list to become certified. Typically a junior controller is straight out of college. Not my case. I had been an instructor for 5 years in the same technical area I was now working to be a controller in. I was literally the author of most of the work books they used for training and reference. My technical skills were excellent and well developed.

But the “rule” was, if you are not certified, you don’t get any duties other than to study and prepare for certification. I was bored to death. It was going to take about 2 years to become certified based on being number 4 and the limits of simulator time. I begged and begged for some productive work. I was denied over and over. I was told to study the workbooks. I pointed out I had written most of them and didn’t really need to study them any more. No, I was told. I changed jobs.

Off to the Rapid Lab:

I heard about a lab that was dedicated to developing new displays for the shuttle. I thought I could fit in. I was an OK programmer, and an expert on piloting the shuttle. I transferred. This was a big mistake.

There was a senior Civil Servant in the lab that caused me lots of harm at first. I will not give his name because he came to realize I was having trouble and later came to my support. This is my policy. If someone comes around to stop causing me harm, I forgive them. Anyway, he thought he was the one and only person that could talk about shuttle displays to anyone outside the lab. I didn't know this when I took the job. He was also the system administrator for our larger computers.

I got into the lab and took off running. Our job was to promote the lab as the place to prototype new ideas for displays. I had many ideas. I knew every pilot astronaut and knew them well. I knew the flight controllers and the flight directors. I started talking to them about ideas for display improvements and how our lab could help. This person was furious. He told everyone I talked to I was out of control and they should only talk to him. I need to point out this guy was an ace with computer networks, but didn't know anything on how the shuttle operated. I went to my management and got some bad news. They were afraid of him also. It turns out he had a contact in Life Sciences that was at that time was our primary source of funding. He had management by the proverbial "soft spot" -- money.

I decided to concentrate on learning how a network of workstations works. This was a big reason I came to the lab. I was disappointed to find out that all system administrators in this lab thought the lab was for them and us users were to be told as little as possible. They gave me no information at all on networking. Even when I needed information to do my job – nothing.

OK, I say – I will just write code on my workstation. I needed a decent development environment – text editor, debugger, purifiers, etc. First I need EMACs. This is free software from the GNU project – open source code, no cost at all, good editor, very powerful. I went to the systems administrators, Mark Fridye and Bob Hennan. No I was told. Use the VI editor. This is actually a powerful editor, but developed for pre-mouse computers of the 60s. I can't type well and my previous efforts to use it had failed. I begged for the free EMACS. No!!!! Learn VI. I did my best, but as I said I can't type well.

I struggle with VI and am writing some code. Now I need a debugger. This is considered essential for programmers today. You simply can't write good code without one. The system administrators don't need a debugger because they don't write code. I was told we had one copy of the Silicon Graphics debugger on the slowest computer in the lab. No one used this computer because it was so slow. To debug, you have to load the real program, then the debugger on the same computer and have them run together. We were working on real time displays and this poor little computer came to its knees when you attempted to use it as a debugger. I asked if we could move the debugger license to a faster computer. No I was told. Use the slow computer. Even when told it doesn't work, they didn't care. Apparently the lab was the "play ground" of the administrators and not really for use by the users. Not a good management model in my opinion.

I checked with the Silicon Graphics representative and got a price on getting more debugger licenses. Not too expensive. Well within our budget. I talked to management and put in a purchase request for 4 more copies of the debugger – approved. As the sales order hit Silicon Graphics someone there saw something and gave me a call, "You already have 5 licenses, based on the size of your lab isn't this enough."

"No", I tell them we only have one and we need more. I am assured we have 5 licenses of the much needed debugger.

I ask Mark and Bob to check. "No problem we have 5 licenses, we can also float them to run on any computer in the lab." I was not a happy person. I gave them a dirty look and sent off a dirty email to my management complaining. This whole time we had 5 debuggers. I was very unhappy. I got chewed out by my management for complaining about the poor performance of Mark and Bob.

While in the training division, I had developed a simulator for Entry Guidance that ran on an old PC running DOS as the operating system. I used Quick Basic to develop it. It worked well and was part of the training flow for the astronauts. I had saved NASA a bunch of money by turning the class from 4 hours in the really expensive full up simulator time into 2 hours at a PC and 2 hours in the expensive simulator.

I had an idea for a completely new shuttle display. I needed a Quick Basic debugger though. More NASA insanity. The process for software purchases was to put in all requests for the next year, get them approved, and then buy them next year. This debugger cost $75 and I needed it now, not next year. There was a provision to go to the head of the Information Technology division and ask for a special request for an immediate purchase. I thought my idea had merit. It took me about 2 days full time talking to get my Mark and Bob to give me permission to ask this man. I finally got in front of him and he loved the idea. *$75 to come up with a whole new way to fly the shuttle?* He approved it immediately.

I developed the display on my own time. By this time I was telling my management openly and often they were totally and completely messed up. I told them I could with an obsolete computer and cheap software do a better job than the whole lab. They thought I was crazy. I was not crazy yet.

I ended up developing the new display. It is a small executable that can run on any PC. I emailed it to about 200 people. It was a hit. I had indeed done better than the entire lab all by myself. They were really mad at me. My goal was to use my considerable technical talents to "become famous" then use this position to talk about how to fix management.

Good Managers At NASA:

I will admit that most of my managers at NASA have been good to me. My first managers liked my style of not giving into the status quo. This was John Sims, Charlie Brown and Ray Dell'Osso. Ray was the "big boss" -- he ran the training division. I initially came to NASA to interview as an astronaut instructor for the contractor. Ray saw my resume and interviewed me. I ended up being hired by him as a Civil Servant. My first supervisor was Charlie Brown. He moved up the chain and John Sims took over the job. All three of the people I mentioned supported me 100%.

I had a serious of bad managers from the time I left the training division until I returned from my illegal hospitalization in the summer of 1999. Then I worked for some very good people for a while. This was Mitch Macha and Stephen Gonzalez. Both of these people helped me develop. I was a programmer and didn't have to butt heads with managers in other departments to do my job. I simply wrote code that worked – my code always worked and I always had happy customers.

I offer my relationship with Mr. Bill Readdy to the Rapid Lab:

Another thing I brought to the lab was I knew Bill Readdy. He was the pilot of STS-51. That was his first mission. I was the Control Prop instructor for STS-51. I was the one that taught him how to do all of the manual flying tasks, operating of the main engines, operating of the mid size engines called the Orbital Maneuvering System (OMS), and operating the small thrusters used to maneuver the shuttle around on orbit called the Reaction Control System (RCS). And I worked very hard with Mr. Readdy and he really appreciated it. I spent extra time with him to get him up to speed. And we continued our relationship even after he was up in Washington DC and I was down in the Rapid Lab building displays.

My boss, John Whitely called me in one day and said, "I am very uncomfortable with this relationship you have with Mr. Readdy."

I said, "Mr. Whitely, consider this a relationship for the entire lab. I am willing to work with you, and everything I do with Mr. Readdy will go through you. But I think this is very good for our lab to have this mentor and champion in Mr. Readdy." I just offered to become an absolute team player and have this relationship I have with Mr. Readdy to be an asset for him and the lab. And, he gave me the world's dirtiest look that this might happen. It really bugged me that I told him that I considered my relationship with Mr. Readdy as an asset for him and his entire organization and not something that I had any intention of using to go around.

Rats on a Stick:

In fact Mr. Readdy called me more than I called him. Once he called me and said, "Danny we are like rats on a stick up here on contingency aborts. Can you help us build a better display so we have situational awareness on an abort?" He called me and asked me to help out with that task – which I did. This work ultimately got turned into SAFM.

Bill had also asked me to look at having Draper Labs support the work. I took a trip to Draper Labs and I was more than a little bit impressed. Draper is next to MIT and gets the pick of the best MIT graduates to work for them. The level of technical competence at Draper is outstanding. I also called a couple of people in NASA and asked what they thought. My basic idea was to run a simple program much like the Mission Control Center Abort Region Determinator (ARD) on board, then something like the Downrange Abort Estimator (DAE) for the entry phase. I was very familiar with both software algorithms and knew they could run on the proposed upgraded Shuttle display hardware.

I also knew that many of the flight controllers would not like the idea. They have historically been very protective of their position to make all abort decisions. I kept a low profile so the managers of the flight controllers would not kill my proposals. I succeeded.

By the time the managers of the flight controller found about this idea, it already had a life of its own. They attempted to kill it but they failed.

NASA Tries to Put me in Jail:

We were using a development tool called VAPS in the lab. Rather than write code line-by-line to make a display, you can draw the display using the mouse then hook the display up to the simulator. It was great. It turns out this software was designed to also run on small computers that you find on aircraft and cars. It generates standard code in a language called "c" and then you compile it to the small computer. At this time to make shuttle displays the programmer had to hand write the code line by line. I had an idea. We prototype the display in our lab using VAPS then give the VAPS files to the flight software guys. They do all of the extensive quality control checks, but start with our files and compile to the computers on the shuttle. Management loved the idea. Better quality and NASA would save lots of money.

I get approval for a $250,000 contract to see if this can actually be done. We hit a big snag. VAPS was and is built by a Canadian company. The shuttle is a launch vehicle. Lockheed had just gotten into a lot of trouble by helping the Chinese solve a failure of the Long March launcher – launchers are very close to ICBMS. The problem was so bad the Department of Commerce was fired as the government agency to approve transfer of launch vehicle technology and the Department of State had picked this task up. The Department of State was just gearing up to do this new job. They were of course having some growing pains. I worked with everyone openly and honestly on this contract. People in NASA procurement were great. People in the export office of NASA were great. People at Department of State were great. They all liked the idea of being part of a project to help save money.

I briefed management almost daily on my progress. I asked for inputs. Everything I did was in the open. Finally the big day came. Department of State signed our export license. Very quickly NASA procurement and NASA export control signed the contract. I also signed it. What happens next is in my opinion absolute proof on how badly NASA bullies. I was called into my boss's office the next day, "Danny we are opening a criminal investigation against you for violating export laws."

I asked "How can this be? You were personally briefed on everything I was doing. If the contract was flawed, why didn't you tell me before I signed it?" I also asked to talk immediately with the investigators at NASA to tell them my part. It is in the constitution to "face your accuser". I was denied this right. I never got to face my accuser.

The next week my boss called me in, "Danny, we have dropped the charges. You really cover your tracks well. We will get you next time." Let me repeat this, "We will get you next time." A cold chill went up my spine. He had just told me in so many words they were out to get me. They succeeded in the summer of 1999.

The Last Straw, My Mind Starts to Snap

A less than average programmer was given a complex task in the lab. He asked for my help and I gave it to him. The project was to get a total of 3 monitors running our simulation of the shuttle cockpit and out the windows video. To do this we needed 2 computers. One computer could only drive 2 monitors. I needed very badly to have one of

the computers command the other to run a program on itself. I asked the system administrators, Mark Fridye and Bob Hennan how to do this. I just got the run around. I asked several times. More run around. I told them Unix must have such a basic capability. More run around.

I studied the VAPS software that was driving our cockpit displays and found a very difficult to implement work around. I spent many, many hours implementing this in VAPS. It turns out the Unix "exec" command does what I needed and it was commonly used by the administrators. They were apparently outright lying to me to prevent me from having the "power" to run a script from another computer.

I was starting to complain to my management at the support I was getting from Mark and Bob. I was complaining the lab was managed poorly. This did not make management happy. The support got worse.

Our software called VAPS needs reconfiguration of some files to communicate between two computers. I needed administrator privilege to configure the files. By this time I was working all night to get the project done in time. I needed to be able to do the configuration myself. This right was denied. I was told I needed more Unix experience to get this right. I explained these were stand alone machines and it is not unusual for programmers to get administrator privilege on a stand alone machine. For example: today all users of Windows at NASA are administrators on their workstation. As a compromise I was told I would get the privilege at 4:30 that afternoon and a system administer would sit with me through the day. It turns out my "instructor" knew nothing about Unix – he was a Windows guy. I spent the day teaching him Unix. I was not given the privilege at the end of the day either. That night I needing to reconfigure, but could not. I was not happy. The next morning I complained bitterly to management about how the lab was being run. Management did not respond positively.

Next I needed a 50 foot Ethernet cable. I was told it would take 2 weeks. I reminded the Mark and Bob numerous times. The two weeks were up. The project dead line was approaching. I asked for the cable. I was told there was none. I was really, really upset and let the Mark and Bob know I was. I stormed out of the lab, went to a local store and bought the cable with my own money. When I got back, two cables were made already. It turns out making a cable could be done in the lab and took about 2 minutes. I complained once again. I asked why I was told two weeks. When the deadline came up, why was I led to believe my project was in jeopardy because we had failed to get the cables? Again I complained to management about how the lab was being run.

About this time, I am getting really stressed at work and at home. I found out in so many words, NASA management was out to get me in the criminal investigation against me. This makes sense because I was a very vocal critic of NASA management. It was very common for me to ask, "Do you know what meeting of NASA managers is? It is a bunch of people in a room lying to each other." My other anti-management statement was, "If the human race finds an asteroid is going to hit the earth in 15 years, don't ask NASA to lead the effort to deflect the thing. It is too dysfunctional. Kill NASA and start over with a different group of people." The summary is, I had thrown down the gauntlet. I made it a point to insult management at every opportunity I could. I knew this put me at risk. I knew I would never be promoted. But I had no idea NASA management would resort to wholesale lying to doctors and open violation of the law to silence me.

I am having anxiety and it is getting worse. I decided to try the Employee Assistance Program, EAP. This was a big mistake. At first it was OK. The person I was seeing agreed I was having an appropriate reaction for a lot of stressors at work and at home. She agreed I was not being treated well by my boss. In summary, she agreed I was being bullied. Then one day she tells me I am bipolar and need medication. I didn't know what the criteria for bipolar was, so I simply agreed. I also didn't realize that once labeled bipolar, in management's eyes all problems become something 100% internal to me. In other words, any anxiety I have is the result of the illness and not due to work related stress. This is a common thing for an EAP office that is part of the system to do. A person comes in suffering from too much stress on the job. It become obvious the person is being bullied by his boss or his coworkers. This is not a diagnosis management wants. The people in the EAP office are pro-management because their career progression is in management. The simple solution for EAP is to declare management is not being bullies and the person is mentally ill.

I deeply regret it now, but I accepted the diagnosis of bipolar with open arms. I didn't like the way I was feeling and the thought a few pills would help me out was an easy way out for me. I could not have been more wrong. The pills not only didn't work, they made me much worse.

I went to a local psychiatrist and he prescribed Zoloft and Depakote. I didn't know it at the time, but the Zoloft write-up has a very clear, in bold, in all caps warning to not give to someone that might be on the verge of a manic attack. It clearly says if the person becomes manic after giving the medication, to take them off. I got worse after starting the pills. I told my doctor this. He did nothing. He kept me on both medications.

I finally get bullied to the point I saw no way out. I couldn't resign because I needed the job to feed my family. I also had the aspiration of thinking I might be able to one day have an impact on the dysfunctional/bullying management style at the NASA I had loved for my entire life. On July 22, 1999 I finally called NASA management out in the form of a very bazaar and insulting email. I expected my email to bring my allegations of being bullied into the light of day. I didn't account for NASA management resorting to openly lying to my doctors, getting the local constables to act improperly, and even getting a local judge to refuse to hear my case or appoint me an attorney.

Jeff Bertsch mistreats me – two different ways:

I was starting to read about this thing called verbal abuse. I had been researching it and all of the sudden it occurred to me that what was happening to me in the Rapid Lab was pretty much verbal abuse. I realized that Jeff Bertsch was the world's master at a thing called "crazy speak".

I went to a meeting with Jeff – something to do with some technical matter. I don't remember what the details were. Jeff was in the meeting, I was in the meeting, 3 or 4 other people were in the meeting. An issue came up and I started to address it. All of the sudden Jeff got up and pretended I did not exist and he started talking. And I said, "Jeff, why don't you let me finish my point. I was almost to my punch line." Jeff just kept talking. I said, "Jeff excuse me for just a minute, allow me to just finish. I need 30 seconds to finish my point. Can I please talk?"

He just kept talking like I was not even in the room. He did not even acknowledge my presence. He did not say, "No Danny I am not going to let you finish." He just kept talking. I said again, "Jeff, please let me finish my point."

Two other guys thought I might have a good point. One of them said, "Yes Jeff, I would like to hear Danny's point. Could you please let Danny finish his point?" Jeff didn't even acknowledge that person existed. Jeff just kept talking. I gave up and sat down.

A couple of weeks later I am outside of Jeff's office telling my coworkers about this thing called "crazy speak." I am saying Jeff uses crazy speech. Well, Jeff over heard my conversation and got upset. He stormed out of his office. What he then did is really bad. He starts mocking insanity with facial expressions. He looked kind of like a fish that had been caught and taken out of the water and is about ready to die. A fish that is about ready to die starts making these horrible motions with their mouth. I don't know if you have seen this, but I used to go fishing with my granddad. He would take the carp out of the water and throw them up on the bank. He didn't like carp. He would give them a death sentence and throw them up on the bank. They would have these gasping mouth motions just before they died.

Well that is what Jeff did with his mouth. Mocking the concept of crazy speech. Well I had told Jeff I had this thing called bipolar disorder or at least this is what they told me I had at the time. I told Jeff I had these issues and I would like him to help me with them. So he comes at me mocking insanity with a most horrible, horrible facial expression. Let me put it this way -- the equivalent is to go up to a black guy and call him the "n" word in the work place -- totally unacceptable. And I said, "Jeff, that was not good." And he got this look on his face like, "Holy shit, I just did it in front of witnesses!" And he said, "Yes I know."

Jeff grabs me and says "We are taking you to Building 4 South." I explain to him that the Employee Assistance Program (EAP) told me that I was stressed because management actions toward me are inappropriate. He said, "Oh, I don't believe that. We need to go talk to them."

I said, "That is a good idea Jeff. Why don't you and I go talk to EAP." This would be kind of like marriage counseling. We can reconcile what we are doing. We could discuss our issue in front of an impartial observer. All of the sudden it occurred to him what that meant. He would go in front of a counselor and have to describe his behavior. You could see this look of fear in his eyes. He knows that the crap he pulls on me like this meeting thing and pretending he never heard me would not float in front of a third party. He refused to go to EAP.

Bruce Hilty Insults My Mental Disability:

Later in the day I went into talk to Bruce Hilty. I remember I walked into his office, I came in the room. I don't remember what I came in there for. But I do remember I had been having a lot of trouble forgetting stuff. I was very aware that my thought process for remembering stuff was not functioning well. Bruce looked at my temporary badge. Bruce says, "Haw, Haw, Haw. Turkey badge. Turkey badge. You forgot your badge!" I did not say anything, but I was very hurt by his mocking. And then I thought, Bruce knows I suffer from a thing called bipolar. Bruce knows that I have been having some issues lately. I decide I will make a stand here to tell Bruce I didn't think his comment was appropriate.

I told Bruce, “You know that really upset me. I suffer from bipolar disorder and because of my bipolar disorder, I have this thing called mania which causes me to forget. I am very sensitive and very hurt when you point out the fact I forgot my badge.”

Bruce says, “Well let me just explain to you that I am just being funny. In MOD we are funny. You just need to have a better sense of humor.” This was not the appropriate response from Bruce.

Something I had read about how to solve conflicts suddenly occurred to me. I ask Bruce, “Can we sit down and I can tell you what you have done that hurt my feelings and you do not respond? You say nothing. And the fact you don’t respond does not tell me that you agree that what I said is correct, but at least I know I have the right and the ability to tell you something you have said has hurt me without you having the chance to convince me I was wrong.” And then I told Bruce, “The second rule is there is a very good chance that this will break down and you will not be able to do stay quiet. You will have to respond, you will be compelled to respond, you will get agitated. Second rule is I have the right to leave. Do you agree with the rules Bruce?”

He agrees. He sits down at his desk. I sit down across from his desk. And I say again, “Bruce, you really upset my feelings because I am suffering from a mental illness and I am very sensitive to this. And my mental illness has a symptom of mania which makes me forget. And when you tell me, ‘Haw, Haw, turkey badge.’ That upsets my feelings.” OK, the point is at that time Bruce should say nothing. Oh no, Bruce can’t do that.

Bruce says, “All I was trying to tell you Danny is it is a normal thing in MOD to give each other a hard time about forgetting a badge.”

I said, “You are not playing by the rules. The rule is I get to tell you what you said that upset me and you say nothing.”

Bruce responds, “Danny yes you are right. I understand the rules completely, but you don’t understand I am just trying to tell you it is a standard thing to…”.

I respond, “Bruce you just broke the rules again.”

OK, you guys are getting the point here. I got agitated. Bruce would not just let me say my piece. He had to have the last word and explain to me I was being overly sensitive. The fact that I had a mental illness that causes me to forget things didn’t matter. I was just being overly sensitive.

So I got up to leave. Bruce in a command voice said, “Come back here Danny. I’m not finished with you yet.”

Jeff and Bruce Both Agree to a Move

I have pointed out some things that Jeff and Bruce did to me that I thought were inappropriate. But, I will give them both my thanks and forgiveness in the long run. Both finally realized the strain of working in the Rapid Lab was not healthy for me anymore. They both approved my move to Building 4 South into the middle of the astronaut office. We were thinking about setting up an annex there anyway. Withot the annex our contacts with the astronauts was limited to formal checkouts and discussions – The Rapid Lab was a 5 minute walk across the Johnson Space Center campus.

After we set up in Building 4 South, we would open the communication to informal visits to take a look. If I was over there, I would meet them in the hall and tend to have lunch with them. This would give me the opportunity to pick their brains on a regular basis.

Jeff took me over to Building 4 South one day and set the arrangement up. The next day I was shocked. My desk was ready. To this day I can't believe this happened. Setting up a desk, including phone and computer typically takes a couple of weeks. I was ready to move in one day.

Right after I found out I was ready to move, Mr. John Whitely called me in his office and said I could not make the move. I asked him why. He told me it would take a while for the astronaut office to prepare the office space. I guess he didn't know I had just come back from Building 4 South and everything was ready. All I needed was a cart and I could move my stuff in less than an hour. He simply ignored my comment that the desk was ready and told me I was not going to move. It is impossible for me to describe what this did to my state of mind. Up to this point I had been in obvious trouble (working 36 hour days), I informed my management I had a known disability, they were telling me I was very disruptive, why would they not approve my transfer. You would think they would be very happy to see me leave. Now they were going to keep me. There was no rational reason for this. This is the point that based on his description in the book Dragonfly, I realized my denial to be moved had to have come from the Johnson Space Center Director, George Abbey. There was no other rational explanation to what was happening to me. Mr. Abbey had to know about my aggravated mental state, why wouldn't he let me go to the astronaut office where I could exist in peace.

OH MY GOD ---- MR. ABBEY IS TRYING TO DRIVE ME CRAZY!!!!!

Ok, I am not going to say I can prove he was, but I think I have enough evidence to convince anyone this thought was not irrational. I was not delusional to think Mr. Abbey was out to get me. I might have been wrong, but not delusional. I went on a trip to the Dallas area. I talked with a close friend and my aunt to see if my thoughts were rational. I knew I was in a state of mind that irrational thoughts were possible. Both heard my story and agreed based on the evidence my thought of intentionally attempting to drive me crazy was rational. OK, maybe Mr. Abbey just didn't want me to go to the astronaut office, and didn't care about my deteriorating mental condition. Or maybe he didn't know at all, and it was Mr. Whitely that decided on his own to not let me move. But I do know that what happened in my mind when Mr. Whitely denied my transfer maybe the worst thing a human being has every gone through on this planet -- this is not said tongue and cheek. I know the reason I repressed this memory for years. Thinking of this event would have resurrected the unbearable emotions I experienced at the time.

I could not use any of the official NASA reporting systems because Mr. Abbey controlled all of those. I could not mount a court case, because I had very little hard evidence. I needed publicity. I thought of a mass emailing. I thought before I wrote it if I should go with straight forward statements or write it intentionally bazaar. I decided on bizarre. I must admit, I overshot any reasonable limit on bizarre. On the morning of July 22, 1999, I sent Mr Abbey the most insulting email I could come up with. I expected someone to call me.

I had my cell phone on and was checking my email. Why didn't someone call me? I sent an email at mid-morning to Mr. Abbey asking him to call me. What I got was about 3 hours later two guns stuck in my face, thrown to the ground then a 9mm automatic forcefully stuck in my left year, and one forcefully stuck to the back of my skull (enough pressure to cause pain). When I asked who they were, they said "Federal Gooks". When I asked to see an attorney, they said I was being detained as a witness and didn't need one. Then after a crowd gathered they read me my rights in front of everybody. "OK, so now I am being arrested." I asked for an attorney after I am in the car. Now I am a witness again and don't need an attorney. Needless to say this behavior on the part of the police really stressed me out. I got to the station and they told me after they processed me they were going to take me upstairs and be interrogated. Once more, "Can I have a lawyer?"

They reply once again, "No. You don't need a lawyer, you are being detained as a witness."

Finally I came to the conclusion that they were going to kill me. I looked them right in the eye and said I knew they were going to take me out, use a drop gun, and shoot me. I told them I was not going to give them the pleasure of having me beg. They continued the very aggressive behavior for a few minutes. I repeated my statement. All of a sudden they all left the room and it got very quiet. They came in and without saying a word gently undid my handcuffs and gently helped me in the police car.

Life in a Psych Ward:

They took me to Deveraux hospital where believe it or not it got worse. The primary problem with the initial interview at Deveraux was a complete lack of orientation. They did not tell me once where I was, what legal basis they had to keep me against my will, and what needed to happen for me to become a free man again.

First of all, Deveraux does not look like a hospital. It looks like a campus of one story office buildings. This is what I thought at first. When I first saw the facility, I thought I had won my dispute with Mr. Abbey and the rest of NASA management and I was going be told about my victory. During my initial interview, I kept expecting someone to walk in and tell me my battle with NASA management was over. This never happened.

Not a single word came out of the mouth of the Deveraux person to let me know where I was. All she did was ask questions. I am not exaggerating one bit. Literally every word out of her mouth was a question. I cycled about 3 times from believing I had won my battle, to believing I was in some mental health facility and their goal was to drive me deeper and deeper into a bad mental state.

I finally realized there were no policemen, no guards, and nobody even in a doctor's smock. It suddenly occurred to me that I had the right to just get up and leave. The police had never told me why I was being detained, and the people at Deveraux certainly had not. I got up to leave. As I approached the door, I made eye contact with a middle aged man. I instantly thought to my self this is the man that is really in charge. A few months after I got out of the hospital, Andrea Yates killed her 5 kids. I recognized his picture on the TV and was able to ID him as Dr. Mohammad Saeed. The doctor that botched the Yates case by taking her off her anti-psychotic medication was the doctor that botched my case by not orienting me to where I was and why I was there.

I made it to the door and found it locked. By this time 3 big guys were pulling me away. I attempted to push them away, but could not. They through me on the ground and gave me a strong sedative.

I recall a brief moment of being walked to my unit, then I recall waking up in the middle of the night. I asked the night nurse where I was and why I was there. All she said was, "Danny, you stopped taking you medicine."

I replied, "No I didn't. I have been on my Depakote".

Then she handed me 5 medication release forms to sign. I had stopped drinking any alcohol about a year and a half earlier because I was drinking too much. I was afraid one of these medications might be a central nervous system depressant and trigger me back to using alcohol to make me feel better. I asked her about this.

Rather than discuss what these medication were, she simply demanded once again I sign the releases. I knew she had the power to release me or keep me, so I did what I was commanded to do. I have since found out that what she did was illegal. A patient can not be ordered or coerced into signing a release to use medication. This violation of state statutes is way down on the list of state statute violations made during my hospital stay.

It turned out the doctor that "cared" for me after my initial evaluation, Patricia Corker, is mentally ill. She has been forced into psychiatric care in the past by the Texas Medical Board. Her mental illness is very evident in the way she abuses her patients at Deveraux. I also know through my support groups, she is active in Alcoholics Anonymous in Houston and is considered a "raving lunatic" in this community. She is also a close

associate with Jackie Reese who is head of the Employee Assistance Program, EAP, at NASA. The only reason I can think a Harris County judge would send me to a small private facility in Galveston County is because they were influenced by someone in a high level position. It is unheard of for a judge to send an mental health patient to a different county. Sending me to a small private facility is also very unusual. It is my opinion someone got to Judge Ditta and the judge behaved improperly in sending me to Deveraux. If I had been sent to Ben Taub hospital in Harris County, I believe I would have been examined and released.

I was in for 2 days before I was even told where I was and what legal grounds they had to hold me against my will. I found out by having a sheet of paper that explained the rules for involuntary lockup appear on my night stand. I can only assume a staff member realized I didn't have a clue what the rules were and left this paper for me to see. I felt greatly relieved to find this document. I finally knew what legal action was taken to lock me up.

I was also in for 2 days before I talked to my parents. I was not allowed to make a private phone call and I was not allowed to send private mail. These actions by Deveraux were violations of state law. Orientation and family support are both considered essential for a new patient.

I feared a judge might be influenced. I was correct. Judge Gladys Burwell of Galveston County refused to hear my case, or give me an attorney. She did this because I refused to sign a two sentence contract committing myself to pay all court costs – including the county's. This is unheard of. Psych patients do not have to pay all court costs to get due process. In fact the law requires the court to automatically assign an attorney to all psych patients the day they hear the patient is locked up against his will. This did not happen in my case.

My 72 hours of lockup without a hearing was approaching. I didn't like the Deveraux hospital, its doctors, or its nurses. They didn't like me either. I complained loudly and often I thought I was being held against the law. My parents had finally entered the picture, and they didn't like Deveraux either. My mother had an altercation with Dr. Corke when she asked the doctor if the medications I was on before I came to the hospital could have been causing me problems. Dr. Corke refused to answer. My mother got angry at the doctor for not answering. My mother was right. My behavior could easily be explained by either of 2 medications I was taking before I went to the hospital. I have no idea why the doctor refused to tell my mother this. My only guess is she was covering for my earlier doctor who might be in trouble for giving me these medications in the first place.

I was finally allowed to hire an attorney to represent me. My attorney talked to the doctor and was told Deveraux's courier had simply failed to file the paperwork with the Harris County court and this was why I did not have a hearing. I knew this must be a lie and I was right. Later when I got my medical records, it was clearly documented a Galveston County Judge refused to hear my case because I refused to sign an agreement to pay all court costs. See Appendix B. Dr. Corke had no legal basis to keep me past the 72 hour limit that was coming up in a few hours, but told my attorney they would violate Texas law and keep me anyway. I was told for the first time if I went before a judge, I would be committed for a long time to the state asylum in Austin, Texas. They gave me the option of signing in "voluntarily" in another hospital – Mainland Hospital in Texas City. I took this option. I knew I would be released by a fair judge, but feared a local judge would side with NASA.

When I was taken to the hospital, I knew I was:

1. Not a threat to anyone
2. Not suicidal
3. Could take care of myself

I knew I did not meet the criteria for involuntary admission, but I also knew I had just written the most insulting note I could think of and sent it to a very powerful man that had a history of abusing his power. I knew that the system had stepped over the bounds of following the law and was not treating me fairly. It was obvious to me that keeping me locked up in a psych ward was good for NASA. It was obvious to me that the medical system was more than prepared to do a favor to NASA and "bend the law" to keep me locked up.

I now know why the doctor's locked me up. NASA told lie after lie to them about my behavior. I will admit to acting a bit strange and not sleeping well, but I did none of the things NASA told my doctors. The lies NASA told my doctors included:

- I had "terrorized all of NASA by threatening to come to their homes and injure them if they didn't all resign."
- Had threatened to kill President Clinton
- Had hacked into a personnel data base to get home addresses so I could harm people's family
- My wife had a restraining order against me because I had threatened her and my children.

All of these alleged behaviors are lies. I know NASA told all of this to my doctors because all of these comments are in the medical records generated by my doctors. My actual behavior was carefully documented by my management and is available as an appendix to this book. None of the above behavior is noted in my management's documentation of my actual behavior.

Other violations of the law in my case included NASA being notified 24 hours before my release and me having to have a back to work conference with NASA personnel before my release from the hospital. I had a list of patient's rights that said if I was OK, I could only be held 4 hours and certainly nothing about a back to work conference as a condition for release. I was threatened of being declared and documented as delusional if I insisted on believing they didn't have the right to hold me for 24 instead of 4 hours and didn't have the right to force a back to work conference before I was released. I quickly realized, laws and rules mean almost nothing in a psych ward. The nurses and doctors can do almost anything they want to, and the patients have no recourse at all. If you catch the doctors violating the law, the doctor simply tells you that your belief is a delusion and will cause you to be locked up longer.

I can honestly say I was not told once why I was locked up and what I needed to do to get out. Every time I asked why I was locked up, I was given a dirty look. I can only assume NASA talked the doctors into not telling me what NASA had told them. This way I couldn't attempt to convince my doctors I had not threatened anyone. My parents were not told either. They assumed if I was locked up I needed to be locked up. At one point before I

saw my parents, I thought lockup for years was possible. It is impossible to tell you how terrifying this was to me. As a fighter pilot and private pilot, three times in my life I knew I was dead. I did not panic. I managed to fly the airplane out of harms way. There was no long term trauma. The thought of long term lock up by a system that doesn't follow the rules because I pissed off a powerful person caused great trauma to me. I am gravely affected by this trauma today. I will probably always be gravely affected.

But, on the good side, I met some very good friends in the wards. Maybe the closest friends I have ever had. The patients had to stick together. The staff was mostly cold and uncaring, and even brutal from an emotional stand point. We patients had to stick together to not go crazy by the cold, indifferent treatment of the staff.

My favorite co-patient was Voodoo Lady. I never even heard her real name that I recall. She was a fairly short black lady of medium build that I sensed was very stressed to be there. She was not really conversational, but she loved God, loved the Bible, and hated Satan. Our conversations went something like this.

"Hallelujah"

"Amen"

"Bible Good"

"Devil Bad"

"Praise the Lord"

"Praise Jesus"

Etc, etc, etc. We could go for a long time talking like this. She was quite a character. I sensed she knew she was not talking right but simply could not have a real conversation. Something was definitely wrong with her mind, but I thought of her as kind.

One night she was sitting on the couch getting a bit agitated. One of the nurses was talking in a harsh tone to her. For some reason, psych ward nurses have not figured out kind words in a kind tone have a better chance than threats of sedation and threats of restraints. The nurse left my friend's side for a while to call some orderlies to restrain my friend. I took the opportunity to sit next to her and talk in our strange way about God, the Bible, and the Devil. She instantly calmed down. It is amazing what just having someone to talk to does to calm a person down. The nurse came back and was really mad. She accused me of breaking a hospital rule and it would go into my charts. I didn't like this because I was involuntary and my goal was to be a model citizen. I told the nurse I had not broken any rule, but would be glad to yield if she wished me to. She wanted me to and I did.

I then had to watch the nurse take her anger at me out on my friend. Voodoo Woman did not do well. Two orderlies came in, held her down, and she got a strong sedative. Not needed in my opinion. All she wanted was someone to talk to. The nurse was mad at me because I showed her up at her own job. I had succeeded where she had failed.

Next was "The Guy That Cuts Himself". With one major exception, he looked and acted perfectly normal. The exception was his entire arms from wrist to shoulder were covered with scars. The scars were all about 3 inches long and obviously the result of deep cuts. He had one cut that was very fresh. It was made the day I met him and was the reason he was there. He had made a deep cut with a razor blade earlier that day. He was taken to

the emergency room for several stitches and then locked up in the psych ward. At the time I assumed he wanted to commit suicide, but was really bad at it. I didn't ask for a while.

I got to know him by normal chit-chat. He seemed normal to me in all respects – if you ignored the scars that dominate his arms completely. Then one day he decided he wants to mutilate himself and he did. This is not easy in a psych ward. There is nothing sharp, no long cords on the phone, no shoe laces, etc. What he did was tear at the fresh wound and break the stitches. Then he went to the emergency room for repairs.

The next morning I had a chance to talk with him. I had already talked to him about some of my issues – like not sleeping. This allowed him to open up to me. I asked him "Why do you do this. Are you trying to kill yourself?"

"No," he said. "I do not want to die. I have terrible anxiety. The anxiety is simply not something I can bare. I found as a teenager if I cut myself, the anxiety went away. It is the only thing I know that will take away this pain I can not endure."

I was really amazed. I was in someway honored that this young man would be comfortable telling me this story.

Next is "Panhandle Polly". I have no idea what her diagnosis was. One thing I found out on my first day was some people could not afford cigarettes – she was one of them. We had smoke breaks about 4 times a day and she was always begging for a smoke. She was not the only one. I asked my mom to buy a carton of smokes for me and she did. I became the supplier of cigarettes.

Speaking of cigarettes and psych wards, many psych wards are associated with hospitals and most hospitals have no smoking policies. This leads to no smoking psych wards. In my opinion involuntarily forcing a person with a mental health problem, who is in an episode to give up smoking in the peak of the episode is pure and simple torture. In my opinion psych wards need a lot of work on minimizing the trauma they cause to their patients. It is my opinion that I suffer today from psych ward induced trauma caused by my 1999 stay.

Well, back to Panhandle Polly. She was about 5' 6", dish water blonde hair and thin -- very thin. The way she carried herself told you instantly she lived in constant terror. Her terror oozed from every pour of her body. It completely dominated her. She was terrified to ask for cigarettes, but she was addicted. I made it a point to always offer her one first thing on a smoke break. Then offer her another half way through. She always accepted the second. Then I gave her a pack. She carried it every where she went. It was obvious that she loved the power of being the owner of her own cigarettes.

Now you may be wondering why I call her Panhandle Polly. My upbringing is the Panhandle of Texas. I good friend of mine at NASA brought me one of the "Hank the Cow Dog" series. It was perfect for me. My mind was not up to a big novel, and Hank was a cow dog on a panhandle ranch. Just about every thing that happened to Hank is something I could relate to from my youth on a real Panhandle Ranch. Well, this lady I call Polly loved Hank also. She looked like a Panhandle lady. She acted in many ways as one. Her speech, what there was of it, reminded me of a Panhandle lady. I do know I spent hours with her reading this Hank book. We both loved it. We read the book several times. I ended up leaving the book with her. I recall her walking around with her prized cigarettes and her Hank book.

I Am Finally Released

After about 1 and a half weeks in the psych ward, my parents were coming to realize that involuntary lockup was not necessary and certainly not doing me any good. In my opinion, involuntary lockup rarely helps a patient get better. The stress and strain of being locked up is hard to describe. I have talked to pilots that spent time being tortured in the Hanoi Hilton. I can say in all honesty my time being locked up was worse – much worse. The people in the Hilton knew why they were there and knew what needed to happen before they would be let out. I did not know why I was there and didn't know what the rules to get out were.

The following bit of information is really scary. My father was approached by my doctor at about the week and a half point and was asked for his permission to erase my memory. He declined, but believes if he had said yes, they would have done this act without asking me. This tells me the doctor thought I was suffering from mental injury rather than from a mental illness such as bipolar disorder. I have recently read my medical records of the time and found out that my doctor did state I was more likely to act out in the future due to mental injury. It is interesting to note, I have not been for one second treated for mental injury, only for bipolar disorder. I can say the treatment has not been effective. The anti-depressants kick me into mania, and the mood stabilizers simply don't work. I have tried lithium and Depakote without any success. I have had two mental episodes in my life and both occurred after massively stressful events and both took months to recover and I only recovered after being removed from the stressful events.

Two times I started the process of getting released from the hospital. On both occasions I was told I would be committed to the Texas State asylum for a long time if I went to a hearing. I was terrified of this and backed down. Finally after two weeks with no end in site, I started the process again. Again I was told I would be committed to the state asylum for a long time. I told the doctor, "You might be able to do this, but I will take my chances. I don't trust you to follow the law. I don't think you believe I am a danger to anyone. I believe you are acting to make NASA happy. I also believe a local judge may not be following the law. But I am certain the people at the state asylum in Austin will judge me fairly. They are far enough from NASA to avoid its influence. I will take my chances there."

The doctor wrote the EAP head at NASA that I would not present a reason for commitment and I would be released. The law requires under this circumstance I be released in 4 hours. I was released in 24 at the request of NASA. NASA had an all hands meeting to warn everyone I was getting out and they needed to take measures to protect their families. You see NASA was spreading the rumor I had hacked into a data base and had obtained their home addresses so I could injure their families. See the appendix to confirm via my managements documentation, this did not happen.

NASA Will Not Let Me Rest in Peace

As soon as I got out of the hospital I went to the FBI for them to investigate how I was locked up. I was certain many state and maybe Federal laws had been violated. I also contacted an attorney about suing Jackie Reese of the NASA EAP office for calling me psychotic to my coworkers. I was told I had no case. It turns out the laws are written such

that they forbid a counselor from divulging mental health information, but you must prove financial damages to have a case. In summary, the laws that protect the patient have no teeth.

About a week after my release, I get a package in the mail. NASA is going to fire me and I have 10 days to respond. I have an option of signing a last chance agreement instead. My mind is still not functioning well and I know this. I ask for more time. I remind them that I was promised time off to recover. No response. I get a letter from my doctor stating I need time to recover. NASA refuses. I get another letter from my doctor. Again NASA refuses. They continue to force me to respond to the notice to fire me – even with two letters from my doctor telling them I shouldn't be doing this.

Finally my mother is in a room with the NASA human resources representative and she ends up in his face and yelling at him, "Why can't you just leave Danny alone and let him recover." He finally caves in and allows me to use my leave and recover, then I can work the situation of getting back to work.

My termination paperwork stated I had threatened the life of the president. This is a lie. I did not. But I had something on NASA. I had a document signed by my supervisor that I had made a threat to the president. I took the document to the Secret Service and turned myself in. I figured it wasn't going to hurt me, but would hurt my supervisor and NASA management. I think it did. The Secret Service was polite to me and they told me they were not happy they were not contacted about a threat to the president. All I know is my supervisor was not working for NASA when I got back to work.

I Am Put in a Good Place at NASA

My first job in coming back to NASA was as a programmer, a pure and simple programmer. This job was great for me. I was able to concentrate on making the coding work and had no conflicts to resolve with the people around me.

My first program was called Dracula. The name was an acronym, but I forget now what it stood for. The program used a scripting language called TCL (pronounced "tickle") to do some simple number crunching on the data stream from either shuttle or station and then presented the data to the flight controller. The program was already written, but it had a fatal flaw. The data sent to the flight controller ran at about one third real time. The first data was on time, but the longer the program ran the more it fell behind. It took quite a while, but I finally tracked the problem to a single line of code that took one tenth of a second to execute. This may not sound like much, but for a computer that runs thousands of lines in a second this was forever.

Unfortunately, there was no easy way to get around the problem. The program was going to need a complete rewrite. This concerned me because I thought the previous programmer would get mad at me. I did not need any conflicts with my coworkers at this point in my career. I called him in and showed him the problem. He agreed with my assessment and had no problem with a complete rewrite. I was off the hook. No personal conflict. I felt a wave of relief come over me when he approved my approach.

Back to the Rapid Lab

After a stay working as a pure programmer, the idea of building displays for the shuttle captured my attention again. The place to work on shuttle displays was back in the Rapid Lab. I started making inquires on how to get back there. Some might think I was

crazy to go back to such a place after the bullying I endured my first stay there, but the lab was under new management and the person one up the chain of command of the lab was also new. I knew both of the managers involved and got along just fine with them both. I decided to go back.

I sprang the question of me coming back to the new managers and they approved the idea in principle. The good news was the new management agreed with me that the lab was poorly run at the time I had my episode and they asked for some time to straighten the lab up before I came back in. I was a little frustrated, but I agreed to the delay. My frustration stemmed from my desire to use my knowledge of shuttle operations in the development of new displays. There was a program in place to add a display computer to the shuttle and do an overhaul of its displays. I wanted to be a part of this important work.

I finally got back into the lab and at first worked as a line programmer. The display developer team-lead decided he didn't like the lead job, so I took over the lead position. This was the second time I had a lead position at NASA and it was the second time I was successful. Our job was to prototype the new displays on Silicon Graphics work stations so astronauts, instructors, and flight controllers could see them. This way the displays could be seen and tested in an environment that change was easy and cheap. The idea worked great. After seeing the new displays for the first time, many changes were recommended and made. Because of the way the Rapid Lab was run, we could make some of the changes right in front of the end user. At the most it would take us a day or two to show the user the change. With this process in place, the new displays were developed quickly.

Off to the Crew Survival Office

Unfortunately for me, the displays developing phase was finished successfully and the task of making them work on the shuttle hardware was started. This task was not for me and was not done in the Rapid Lab. I needed to move to a job that involved conceptual design, not detailed design. My mind gravitates to the creative needs of conceptual design. I like to work in an area that the design has not even been started yet.

There was such a place at NASA. NASA was in the process of developing the replacement for the shuttle. At the time the program was called the Orbital Space Plane, or OSP for short. It is ironic that the word "plane" became obsolete, because before it was cancelled and handed over to the Orion program, the plane was really a capsule.

I found a niche in the program office. This niche was the crew survival office. The job of our office was to influence the requirements and the design of the spacecraft to make it better for the survival of the crew. This made the office the underdog to the program office in some ways. You see, crew survival systems add weight and cost to a program. The program office most of the time did not like to add the cost and the weight to the system.

Before the Columbia entry accident, I was taking a long hard look at capsules vs. winged vehicles. U.S. astronauts were flying on the Soyuz at this time. Two things about capsules stood out as better than winged vehicles. First the thermal protection material was much harder to damage and was covered during most of the flight. Second, a capsule can perform a successful entry without any active flight control systems. I was bringing these advantages to light when we lost Columbia and its 7 crew members. After the accident the idea of a capsule was accepted by the program. In more detail the program didn't specifically ask for a capsule, it only asked that the crew survive without active flight control

on entry. A winged vehicle could only do this if it provided a Mach 25 escape system. While such a system is feasible in theory, the reality of weight and volume effectively ruled out Mach 25 escape.

I was amazed by how the astronaut office embraced capsules. I thought as I was pushing for capsules, the pilot astronauts would be pushing hard for a winged vehicle. After all, only a winged vehicle required a real pilot to bring it in for a landing. I assumed incorrectly the pilots would strongly resist a capsule that came down on a parachute. I could not have been more wrong. After the Columbia accident I did an informal survey of the pilot astronauts. 100% wanted a capsule under no uncertain terms. It turns out that the ascent and entry were not enjoyed by even the pilot astronauts. The risk of an accident took all the fun out of flying. The fun part of the mission is the part on orbit. The risk of sudden death is miniscule and the astronauts can relax. They saw the ride up and the ride down as not enjoyable, but unavoidable phases to get to the fun stuff – orbit operations.

I was then amazed at how hard it was to convince the engineering community that it was possible to build a capsule that could bring the crew alive if the flight control system failed. I knew it could be done, because the Russians did it. The Soyuz is designed such that without flight control it would enter the atmosphere heat shield forward and enter in such a way the crew would live. I knew this to be true because I heard it straight from the horse's mouth. In 1993 I was the training representative to the NASA effort to buy the Soyuz capsule to use a life boat to the U.S. space station. This was before Russia was a partner in the station.

All the NASA engineers thought it would be impossible to make a capsule that could enter without flight control. They refused to listen to me, much less take a look at the idea. Fortunately I had the opportunity to talk to an old Apollo engineer just before he retired. I approached him about ascent aborts and he was very helpful. But somehow the first unmanned flight of Apollo came into our conversation. It had a catastrophic power failure early in entry and thus lost all flight control. The capsule made it down just fine.

When I first went to the NASA engineers during the OSP program, they didn't listen. None of them remembered the loss of flight control during the first Apollo test and some were working Apollo flight control at the time. Fortunately, I was able to locate the flight test reports of the mission. These documents clearly showed all flight control was lost and the capsule made a safe landing. The requirement for the next spacecraft to survive a complete loss of flight control was put in by the astronaut representative and it became the law of the land. At first the engineers employed by our contractors hated the requirement. They were hot on the idea of a winged vehicle and winged vehicles could not enter without flight control. Some people in our program office also hated the idea. I decided to take a neutral stance and provided technical information to both sides and let them fight it out. The capsule people won and NASA is now building a capsule replacement to the space shuttle that is called Orion.

I Smell a RAT

I was lucky enough to be on the ground floor as decisions on how to go back to the moon were being made. I saw a complete disregard for the rules that govern the relationship between a government agency and a contractor. At the time I didn't think anything about it.

I was used to lying and abuse of the rules by NASA management. But looking back on it I smell a rat on how NASA picked the next rocket to take men into outer space.

We asked the question, “Which launch vehicle do we use?” The choices were the Atlas, the Delta, or a new design. I was right in the middle of the processes that ultimately lead to the decision to build a new launch vehicle. In my opinion the selection was not fair.

For un-manned launches, going high and staying high is good. The satellite is covered with a shroud which is jettisoned as soon as the rocket is out of the atmosphere. If the rocket stayed low, the satellite on the nose of the rocket would overheat. The shuttle stays low enough to have some heating, but the shuttle is covered with tiles and can take the heat.

If the rocket fails when launching a satellite, the satellite is lost – abort is not an option. Even if the rocket failure is benign, e.g. loss if thrust, the mission is over. This is not true for launching people into space. If the rocket fails, the system should bring the crew back safely with an abort. But if the rocket is very high when if fails, the entry vehicle has a long fall before it hits the atmosphere. If the rocket is too high, the entry vehicle will not survive the pullout, or the crew inside the capsule will not survive the very high G levels they will experience.

Both the Atlas and the Delta had profiles published in the literature designed for potential customers. These profiles were available on the internet. The Atlas profiles were OK, but the Delta's were not. I contacted the customer support section of Boeing, the builder of the Delta, to have them lower the altitude of the trajectory. I missed an opportunity to fix the problem by a couple of days. A new player came into the process, Chuck Dingell. One of the first things he did was cut off all direct communication with the launch vehicle makers. I obeyed this directive. What happened in the next months was insane. We had communication to Boeing via Chuck's office to look at using Boeing's Delta as our launch vehicle. But, no one in Chuck's office would tell Boeing their trajectories were too high. I asked why not. I was told we were too busy. I knew at the time this was a lie. Here we have an issue that makes the Delta completely unacceptable to NASA, but NASA is to busy to alert Boeing. I asked Chuck to simply tell Boeing to lower their trajectory -- request denied. I ask for permission to talk for 10 minutes to a Boeing engineer -- request denied -- all communication goes through Chuck's office. I ask for a 10 minute telephone conference with Boeing with someone from Chuck’s office tied in -- request denied. It becomes obvious to me, someone in management doesn't like the Delta and wants their high altitude to kill the idea of using it.

Luckily, I became part of a team to look at surviving an ascent abort without active control of the entry capsule. Height of the booster at the time of the failure has major impact to doing this type of abort. Finally, someone in engineering overrode Chuck and we had a telephone conference with Boeing. As soon as they heard we need lower trajectories, they were surprised. They asked why we hadn't asked sooner. Within 24 hours of being asked they had lower trajectories and we could say will all confidence "We can abort off of the Delta."

Next came the growth of the capsule. It is now called Orion, so I will use that name here. At first, the Orion was small enough to be carried on the heavy version of the Dela. This didn't last for long. Someone at NASA built a wooden mockup of Orion bigger than we were planning at the time, 16.5 feet across at the base. This is huge. It gives the crew much

more room for each crew member than Apollo had. I was in a meeting with John Young (Gemini, Apollo, and Shuttle astronaut) and the astronaut Marsha Ivins. Capt Young was very clear. Apollo was plenty roomy enough for a trip to the moon. 16.5 feet was too big. He was shot down by Marsha. She wanted the 16.5 foot capsule, but had no rationale to back up this requirement. Marsha won the argument, and I think I know why. Marsha is close personal friends with Mike Griffin

Marsha then attempted to do more requirements stuffing to make sure the requirements couldn't be met with the Atlas or the Delta. She asked for a system that could take 3 failures before crew safety would be compromised. You see, both the Atlas and the Delta were two fault tolerant for crew safety with an abort system. They both can take a single failure and keep on flying. After the second failure the crew would need to abort. Asking for 3 fault tolerance is ridiculous. Shuttle doesn't meet this requirement and to design to it would very expensive and create a lot of additional weight. I fought the requirement at the time, and we won. But, I could not see any reason Marsha wanted this requirement. In light of trying to get a requirement to force the design of a new booster, it makes perfect sense.

A new booster was also favored by NASA personnel because, even for the same money spent, a new booster would generate more jobs on the government sector. If we bought either the Atlas or the Delta, Lockheed or Boeing would become the prime contractor. NASA would have a smaller oversight job. If NASA built a new booster, NASA could act as prime contractor. The people making the decision to build a new booster or buy an existing one had a personal stake in the matter. They wanted to new booster to open up a lot of high level management jobs at NASA that they could then fill.

I was Marsha's crew survival representative at the time Mike Griffin was appointed to be the NASA administrator. On the night he interviewed with the president for the job, she made it a point to be in Washington. She told me she had a one-on-one dinner with Dr. Griffin that night. At first I assumed they had worked together in the past. She told me their relationship was personal, not professional. The end result was a huge capsule, not based on any rationale. Is it possible NASA picked this big capsule so the Delta and the Atlas could not carry it? Was the deck unfairly stacked so NASA could build it own booster? Read on for more.

The rocket NASA is building now is called Ares 1. It is the brain child of astronaut Scott Horowitz. At the time he led the Advanced Program branch of the astronaut office, I was his Crew Survival representative. We spoke often. One day he told me about an idea he was working on. He thought the safest first stage for a manned launch vehicle was a space shuttle solid rocket. He first started off by simulating on his personal computer an Apollo capsule on top of a solid. It made Mach 18 and killed the crew by excessive acceleration. Mach 25 is needed to achieve orbit. A second stage was needed. So he tried various second stages and came up with an idea that could carry more than either the Atlas or the Delta.

Scott left the astronaut office and got a job with Thiokol -- the makers of the shuttle's solid rocket motor. Now the stage is set to a flagrant violation of law governing the relationship between the government and a contractor. Marsha Ivins had a government Blackberry and she knew how to use it. She made it a habit to basically act as an agent of Thiokol. If an issue popped up in a meeting about the solid booster, she would simply send an email to someone at Thiokol and have them work the issue. Marsha had so much

disregard for the rules, she would announce in these meeting what she was doing. Keep in mind at the time, NASA knew about an easy to fix flaw in the Delta, but it took months for NASA to alert Boeing to this matter. Needless to say, this gave Thiokol a big advantage over Boeing.

My Technical Work and Lack of Promotion

I easily worked at a pay grade GS-15 level and I believe my management knew it. I had major impact on NASA programs and projects. But I was denied numerous requests to present my work and publish papers. I had heated discussions with my management to have my technical work documented in my performance evaluations. I asked my first level of management to at least put me in for a promotion to GS-14. Considering my work was clearly GS-15, I would think the chance of a GS-14 was very possible. I had never been recommended for promotion by my management.

I was tested with an I.Q. of 150 while a teenager. My language and mental math skills are really bad and must have brought my overall score down. There is a good chance when it comes to engineering work, I am a solid "genius". I do know my mind seeks challenging technical problems and I become obsessed with finding the solution. This obsession is extreme. I literally dream about the technical problem. The technical problem "runs in the background" all day long.

In college I made a 4.0 GPA with very little studying required. In my entire college career I did not have a single class that was even close to a B. I was the curve breaker. During my year of Air Force Pilot Training I took many, many tests. I did not miss a single question the entire year. To the best of my knowledge this had never been done before, nor done since. This was not luck either. I did not guess at a single answer in the hundreds if not thousands of questions.

In addition to Entry Guidance work, I was the Entry Training Flow supervisor in the Training Division. I led that team of people conducting Entry Training, coordinated with other NASA organizations, set class content, etc. I did a great job. This was a leadership position that my ability to delegate was proven by the smooth transition to contracted training.

I also had a leadership position in the Rapid Lab. I led the team of people that prototyped displays for the shuttle upgrade effort. Again, delegation was excellent as was all types of leadership. A very successful project that showed I can lead a team of engineers. The displays were prototyped on schedule and on budget.

My work on capsules for winged vehicles made a major impact to a program and even NASA policy. Influencing a program is GS-15 work, while influencing a NASA policy is even higher. I attempted 3 times to present this work in national and international conferences. All three times my request was denied with no reason given.

I also worked hard on keeping the crew out of the North Atlantic during ascent aborts. This effort involved extensive coordination with many different organizations. I am very good at technical coordination. I delegate well and always show respect for other people's work. I never get agitated about technical work. There is now a Program Requirement in Constellation to keep the crew out of the North Atlantic.

I was given the lead of a team to look at Lunar Rescue. At first I got very little oversight from management and the team came up with a very viable option to rescue the crew for a failure at any point on the lunar profile. The basic concept is to have the next launch vehicle with a lunar lander on "fast alert" on the ground. We studied Russian and commercial US launch vehicles that have quick launch. We did analysis of thermal conditions without power -- the crew would live. For life support we used basically commercial lung powered rebreathers. We came to believe the crew could live without power for 6 days with about 300 pounds of supplies. This was enough time to get the rescue craft to them. At first there was great resistance, but I didn't push the idea. I just asked the concept be presented to the decision makers so they could decide. The decision was to not implement lunar rescue for a 4 day lunar mission, but reconsider for the later longer mission. I did not argue – I am not a decision maker and do not want to be one.

I asked permission to brief these works at conferences, but my requests were all denied. I have never been nominated for a higher pay grade by my supervisor. I believed then and I believe now there was discrimination against me because I am disabled. I see no other reason I have not been promoted.

Last and certainly not least, I believe I made a very positive impact on NASA policy. This work is SES level. This impact was on quashing the dissenting opinion on safety issues. As we all know, this has been a problem in our two fatal shuttle accidents. Engineers had safety concerns about the status of the vehicle, but were afraid to bring them up. NASA policy had been to only take the "consensus" forward, and anyone that brings a different idea forward was severely admonished.

The issue I worked was with Marsh Ivins on a Crew Survival concern on a Solid Rocket Booster, SRB, as the first stage of a manned vehicle. When Scott Horowitz developed the concept, I was his crew survival representative. I saw he truly thought the SRB was the safest way to go. Some people in the Crew Survival office disagreed. It was an honest disagreement. I am personally neutral on solids vs. liquids. I think either can be made safe enough for human flight. But, I fully supported the dissenting opinion's right to bring their concerns forward. At the time the Crew Survival office made our report, I was Marsha Ivin's Crew Survival Representative. At this time she was a direct report to Mike Griffin. She asked me my opinion of the report. I told her I was neutral on the technical content but very much against the portion of the report that stated NASA management had sold out safety for cost and schedule (As I said, I worked with Mr. Horowitz and I knew he was firmly convinced the "Scotty Rocket" would be the safest launch vehicle ever built). I strongly advised her to not quash the report. I recommend it be widely distributed, briefed to the administrator, and even given to the press. She basically agreed and recommended setting up a meeting between the Crew Survival office and the administrator.

I am very happy to see in the press more than once published dissenting opinion that we should not fly the shuttle yet. This is great news. I would like to think my input to Ms. Ivins and the administrator might have positively influenced NASA's policy of quashing a dissenting opinion. I only wish that NASA would stop using very inappropriate actions to quash my opinion NASA management is full of lying bullies. I don't ask for people to agree I am right. I only ask for the right to state my case without being declared "insane" and locked in a psych ward via telling horrible lies to my doctors.

My Medical Records Haunt My Divorce

Meanwhile in the fall of 2005, my home life was going down the tube. I was getting very tired of 15 years of being routinely raged at by my wife. I told her over and over to stop her periodic raging episodes. It worked for a while, but they started back up again. I had enough. I filed for divorce. At first there was going to be no real conflict in the divorce. I was willing to give primary custody to my soon-to-be-ex-wife, Marie. But this changed when she started the process of raging at our 11 year old daughter when she was mad at me. She simply could not stop the raging episodes.

I asked for a psych evaluation for the family. Normally the family law court routinely grants such a request if there is even a hint of a psychological issue causing child abuse – mental or physical. But my wife had a copy of my medical records and countered with the allegations my belief Marie had some very bad behavior was in itself a delusion. I was stunned when the family law court took her side and didn't ask for the evaluation. Here I was alleging child abuse to a family law court, and my alleged mental disability was used by my wife to trump my allegations of child abuse.

I am now coming to grips with where mental disability stands in today's world. The best analogy I can come up with is what it must have been like to be a black man in the deep south half a century ago. You could be the most outstanding citizen in the county, but when I white woman cried rape nothing more needed to be said. You were finished. This is what it is like to have a documented mental disability. No matter what you say or do, your opposition can destroy you completely by bring up the allegation of mental disability. If an allegation of mental disability trumps an allegation of child abuse, it trumps everything.

To fight for my children to not be raged at, I found an attorney that took the case with the belief that the lies NASA told my doctors in 1999 were just that – a bunch of lies. We plotted a strategy to convince the court I was never delusional much less homicidal. This was an expensive thing to do as far as legal fees go. I also convinced my daughter that she must talk to the judge in his chambers. She would need her to tell the judge her mother raged at her, and was doing it fairly often.

Marie was furious with me. She raged at me for bringing our daughter into the mix. I stood my ground. I told her I would spend every penny I owned to make her stop raging at the kids and to clear my name with the courts. Neither was necessary. For the first time in 15 years, Marie finally admitted she had raged at me and she was raging at Jennifer. She said she would stop and she did. For the first time in our marriage, I stood up firmly to her out of control raging and it worked, she has stopped. In retrospect, I am glad the court didn't believe my allegation at first. It forced me to take action to protect my children. I am now confident that without court action the raging will never occur again.

Equal Opportunity Complaints

About the time I was filing for divorce, I took a computer lesson covering the Equal Opportunity system. I found out mental disability is protected under the Equal Opportunity System. I decided to use the system to complain about the way I was insulted by Jeff Bertsch and Bruce Hilty in 1999. The time limits were up, but I claimed I had just found out about the use of the equal opportunity system and they should take my complaint.

Within a couple of days of making my first equal opportunity complaint, I recalled another complaint. Due to the extreme trauma I had at the time it happened, my mind had been suppressing the memory. The memory was the harsh way my transfer to the astronaut office was refused. I had forgotten completely about it. Jeff and Bruce both realized I was not doing well in the Rapid Lab and both had agreed to a transfer to the astronaut office.

I added this failure to make a reasonable accommodation a new equal opportunity complaint. This time I asked for an approved adjustment on the time limit based on repressed memory. The conversation with Mr. Whitely took place in 1999. In late January of 2006 I had another scary conversation with my supervisor. This time it was with Mr. Greg Hite. I came into his office to tell him about my equal opportunity complaints. After I had only told him I was making some complaints, he responded with, "Sit down Danny. We need to talk about this."

I took a seat.

He went on with, "Why are you doing this? I understand you are doing this for your kids but why else?"

I instantly knew he had been briefed on my activity with my divorce attorney. I had made about a dozen emails to my attorney on the NASA email system. I responded with, "What other reason do I need? Isn't protecting my kids enough? But if you want to know, I am after justice"

"You mean you want to make you feel better by getting back at people."

"No Greg, that would be revenge, I am after justice. You know the difference."

He responded by nodding his head.

I was stunned by what we had just said. I thought I would see how much Greg knew about my divorce case. I asked him point blank, "Do you think they would have erased my memory if my father had said yes?"

He lowered his head and said, "Yes." A chill went up my spine. The same people that lied to my doctors in 1999 to have me locked up against my will and likely attempted a very unethical memory erasure were aware I was bringing the injustices of 1999 onto the light of day via my upcoming divorce trial. I was scared out of my mind – literally.

NASA Makes me Jump Through Hoops to Avoid AWOL

I became more and more concerned about my personal safety. I was certain then and I am still certain, the people that had me locked up in 1999 and declared insane with a massive lying campaign were going to do it again. On Feb 3, 2006, I had a massive panic attack coming into work. I went home and asked for sick leave. My leave was granted.

I maintained contact via email. I was cc'ed an email that once again confirmed I was on sick leave and would be on sick leave for some time. I then found out via my equal opportunity counselor the human resource department had changed my status to Absent Without Official Leave, AWOL. This stressed me greatly. It was a Wednesday and I attempted to call the HR representative. No answer. I called again on Thursday. I finally got through.

Ann Whitener is the HR rep. She starts off by telling me I am AWOL and I will not be getting my next paycheck because I don't have a note from my doctor. I explain to her

my leave was approved and confirmed via an email. She doesn't budge. I ask if there is anyway to stay on sick leave without a doctor's note. She lies to me and tells me no. It turns out NASA's sick leave policy allows for extended sick leave without a note from a doctor if it is difficult to get one. For some reason NASA doesn't see full blown panic attacks as a reason it is difficult to get a note from a doctor.

I tell her if I am AWOL, I will be forced to come into work until I can arrange for a doctor's note. I tell her about my full blown panic attacks. Again she doesn't budge. Then she tells me some of my recent emails have made some people think I was paranoid. I was stunned. I might as well have been a black man and have her say, "Some people might think you are a dumb ass n….." I can't begin to describe how deeply I was hurt by being called paranoid.

I send off an angry email to HR that Thursday at about 5:00 pm asking for sick leave and complaining about being called paranoid in the middle of a conversation to get sick leave. I point out that if NASA thinks I am paranoid, why not just grant the leave?

I come into work the next morning. I have the panic attack as I thought I would. It was horrible. But I have a family to feed and need my paycheck. I read an email from Ms. Whiter reversing her earlier decision of AWOL, and giving me some time to get a doctor's note. I am required for the note to say:

1. What my diagnosis is
2. If I am stable or not
3. If there are any accommodation that will allow me to get back to work sooner

I sent an email to question why they needed my diagnosis and if I am stable. Why did NASA management need this to grant sick leave? I pointed out in an email that perhaps I have become addicted to one of the medications I had been taken and need rehab. I shouldn't have to divulge my diagnosis to go on sick leave. Did I have to be stable to get sick leave? Did I have to be unstable to get sick leave? I also asked what NASA management was going to do with this information. Were they going to argue with my doctor that I didn't need much sick leave if I am PTSD instead of bipolar? It is interesting to point out the Vanessa Bowen is now saying she is the one and only person at NASA that knows what my diagnosis is. She never passed it on to my management. If NASA management wasn't even told what my diagnosis was, why did I need to divulge such information to them?

I made an appointment for my doctor for the next Monday, which I missed due to a panic attack as I approached his office. I called NASA HR and ask to implement the provision in NASA sick leave policy that allows for sick leave if a doctor's note is hard to get. I am refused. I asked why. My request for further information is ignored. It is obvious to me that NASA was using my paycheck to leverage their way between me and my doctor.

I made another appointment to see him in his Clear Lake office. I fight my panic attack and finally got to see him and he approved my sick leave and agrees to give NASA management the required information. This was on Tuesday. I had planned to take off the next day to see my best friend in Amarillo, Texas. I got a call from my equal opportunity counselor that NASA had changed the information I needed to provide sick leave and they had mailed the new information to me without any notice. Without this call from my equal

opportunity counselor, I would have gone out of town and missed the letter. I am certain NASA would have put me on AWOL status and taken away my pay if I had not been told about this last minute change by NASA managements. Keep in mind my management didn't tell me about the last minute change. The information came from my Equal Opertunity counselor.

I called my new HR rep, Vanessa Bowen. The first thing Ms. Bowen told me was my refusal to sign a general release for NASA to talk to my doctor was being frowned on by NASA management and my continued refusal to do so would jeopardize my paycheck. I told her I had made no such refusal and had authorized my doctor to send NASA the requested information. I told her very clearly I did not think a general release was necessary and didn't want to sign one. We made an appointment to meet in the Deputy Center Director's office the next day. This man, Bob Cabana was a former astronaut student of mine.

We met in his office and I was immediately presented an already filled out release for NASA to have open communications with my doctor. Fearing for my paycheck, I signed it. Then I was shown the new information requested from my doctor. The new documentation added a statement from my doctor if he thinks if I was dangerous or not. I didn't argue at the time. I had decided on 100% cooperation at the time. But I did wonder what answer to the question would give me sick leave and which would not. Did I need to dangerous or not dangerous to get sick leave? Obviously this information was not needed to make a determination of sick leave or not. NASA was using this request as a backdoor way to communicate to my doctor they thought I might be dangerous. Vanessa later lied about this new piece of information being added at the last minute. She stated the last minute change was only clarification of earlier requested information -- a flagrant lie. Asking my doctor if I am dangerous or not was hardly a clarification of something already asked. Also, NASA must have not really needed this information to grant sick leave. My doctor never gave it to them and I got sick leave anyway.

I complained to Mr. Cabana about me being banned from the site's computer systems. I explain there were some files I needed for my divorce case. Mr. Cabana told me it was routine for people on sick leave to have home access to the NASA computers cut off. I was stunned. I was certain this was a lie he had just made up. I instantly lost all confidence in this man. He had turned from a trusted former student into a lying NASA manager.

I also brought a copy of the NASA sick leave policy to the meeting. I showed it to them and point out all I needed for sick leave is a simple statement from my doctor I am under his care and the time needed. There is nothing about diagnosis, stable or not, or dangerous or not. Both Ms. Bowen and Mr. Cabana simply ignored my statements and questions and moved on to other matters. They didn't even acknowledge they heard my comment about the written NASA sick leave policy vs. the information I was required to give.

NASA Lies to my Doctors and Uses Intimidation Again

I had an idea for my sick leave. The sick leave rules say I can use a "Recognized Medical Practitioner" to generate the required document. I ask for permission to use a Licensed Professional Counselor to generate the medical document. I am told NASA does not allow the use of LPCs. Ms. Bowen made this a blanket statement. She is now lying

about this conversation and is saying she told me that because I was on medication, my request was refused. At this time she didn't know if I was on medication or not. For all NASA knew my diagnosis had been changed to PTSD and I had been taken off all medication. This is only one of many lies Ms. Bowen has told in my dealings with her.

To make matters worse, Ms. Bowen contacted my doctor and told him she was with the Employee Assistance Program – this implied to him she was a mental health professional. Like NASA did in 1999, she proceeded to lie to my doctor about my behavior at NASA. My doctor responded by documenting I was once again delusional and psychotic. I need to point out I have never made a delusional statement or shown psychosis directly to a doctor. 100% of the medical information that I have ever been delusional is based on lies NASA has told my doctors.

I had to cancel my trip to Amarillo to take care of the last minute change to my medical documentation, but make it to Austin to visit my mother. While there, something pops up in my divorce case and I need access to my email folder at NASA. I call Ms. Bowen and ask her for access to my email folder. She refuses direct access. I ask why. I tell her the IT people don't like me because I have alleged misconduct on their part and they will certainly not give me the correct folder. I inform her I am scheduled to come back to work the next Tuesday and this is already Friday. I promise to simply get on the system, get my data and get off. Even when I tell her I need the information to avoid the abuse of a child, she refuses. I ask her again why not. She then steps over the line with "I have a logical reason why, but I don't think you are capable of understanding it." She is now lying about having said this. It is obvious to me that NASA needs a lot of training on insulting a person's mental disability as a way to win an argument.

A Good Solution – Retirement

I must admit that for a moment I might have been delusional. My delusion was NASA management as of 2006 had changed enough from NASA management as of 1999 and would admit to me and the world I was not homicidal in 1999 and they entered an inappropriate relationship with my doctors and a local judge at the time. I put my side of the story out on a web site. My family thought I had proved my point. Every allegation I make of NASA management's misconduct is backed up with documentation.

I quickly came to realize that even with them knowing children were being abused and the lies of 1999 were a direct factor in stopping the abuse -- nothing would be done. NASA management 2006 was just as bad as NASA management 1999. I gave up hope. I came to realize that going back to work was not a great option. The conceptual design phase of Orion was winding down and the program was rapidly entering the detailed design phase. This meant that the lion's share of the work of the Crew Survival office was finished. All I had to look forward to was endless reviewing of documents with little chance of making any substantial input.

My supervisor, Greg Hite, then lied to me about our conversation where he told me he thought they would have erased my memory in 1999 if my father had said yes. It was obvious that NASA management would continue to get between me and my doctors to make sure I was labeled mentally ill and not mentally injured by their misconduct. I called a person I knew I could trust in Human Resources, Julie Barnes. I asked her about my retirement status if I resigned immediately. She told me and it was not as bad as I thought.

When I turned 63, I would get a nice annuity. She then told me about disability retirement that could start right away. At my request, she sent me information on disability retirement. Before I read the literature, I thought I was not eligible. My ability to do engineering work was not in question. The problem was NASA not liking my behavior of accusing them of misconduct on their part. When I saw that "inappropriate conduct" is considered a disability I knew I would get it. According to NASA management I had lots of inappropriate conduct -- up to and including homicidal threats, homicidal acts, threats to the president, etc.

Part of the deal for disability retirement was a requirement to apply for Social Security disability. I did this and the unheard of happened. Within 3 weeks Social Security approved me. I became extremely confident that I would get the rest of the disability from the Federal Employee Retirement System, so I applied with them.

In the mean time NASA sent me a proposal to remove me from Federal service. I was not surprised. The reason were:

1. 30 personal emails in a 2 month period
2. Emails stating I was not homicidal were disturbing to other
3. My attempt to get on site when I was approved on by my management

I requested additional time to get my medical documentation in order. I asked my doctor several times for this information. He stopped returning my calls, so I had to seek a new doctor. I will grant NASA one point in this process. They gave me lots of time to get my medical documentation. Thank you NASA.

But NASA sat on my disability retirement paperwork for about 6 weeks. They waited until after I was fired before it left Johnson Space Center. I can only assume they were hoping I would fear for my paycheck and come crawling back begging for forgiveness and admitting it was all my fault and drop all allegations of misconduct on their part. It didn't work. My response to the proposal to remove me was an allegation I was being removed for whistle blowing in the form of allegations to the 312th District Court (my divorce court), my web site, complaints to the Texas Medical Board, complaints to the Texas and Federal congresses and senates, and to many news organization. I believe to this day, my removal was based on my whistleblowing. Thirty emails in 2 months and the other stated reasons are simply not enough to justify removal, especially with the mitigating situation of a mental health episode.

I threatened to bring an attorney into the mix if NASA didn't send my retirement request forward. 6 weeks to get out of the space center was ridiculous. By this time I was already removed, so NASA had lost its ability of threatening my paycheck to force me into submission. They did attempt to silence me with an offer of $14,500 if I dropped all allegations. They also threw in the mix they would assist me in getting my disability if I dropped all allegations of NASA management misconduct. I declined and pointed out they should assist me in getting my retirement even if I didn't drop all allegations. I didn't need their help getting the retirement. In a very short time after the package left the space center, my retirement was approved. The lies NASA told my doctors in 1999 and in 2006 were working to my advantage. They made me out to be a very sick person and in bad need of a disability paycheck.

I am now very happy to not be working for NASA. I am going to school to get the required credits so I can teach physics at a local junior college. I look forward to starting a career as a college instructor. I have bought a small airplane and enjoy flying it very much. I get along much better with my ex-wife than when we were married. I can now tell people I believe I was bullied by NASA management without fear of being locked up in a psych ward. I don't insist people believe I am right, but I do insist on not being locked up for saying it. All is well with me – I hope all is well with you.

Appendix A: My Actual Behavior

The following is a copy of the document Jeff Bertsch, my boss, made on my behavior in the summer of 1999. Notice there is no mention of violent behavior of threats of violence.

May 28, 1999

Today I got an email from Mr. Deger entitled "Mandatory Reading" with a link to a web page. http://www.crm.com/TECH/computing/9905/28/vets.idg/

Mr. Deger said the article "explains where I fit in this lab better than I ever could." The web page was titled "Why military veterans make great IT leaders". The gist of the article was that the can-do attitude of veterans and their ability to see through the confusion of a problem enables them to be effective technology leaders.

June 3, 1999

Mr. Deger did not show up yesterday, apparently staying here all night\to work on his DDE. I overheard him talking with Mr. Braaten and interrupted them to ask how it was proceeding. After some discussion, I could not determine what specific changes Mr. Deger was trying to make for his DDE. I asked Mr. Deger to present his DDE concepts to us so that we determine what changes he desired. He made a derogatory remark about how all managers knew how to do is call a meeting. We did not khow get any actual work done. I told him to think of it as a technical discussion rather than a meeting and asked him how long it would be before he was ready with his ideas. He replied a week or so, and I scheduled a meeting for June 18 on the topic of his ideas for a new DDE.

June 9, 1999

Mr. Deger was very intense and argumentative today. It appears that his behavior as his dress code is returning to their previous modes. He has been working diligently on the new demo configuration of the AET to support the upcoming conferences. He took on this task after Ms. Srinivasa left for India, and has had some immediate success getting the out-the-window-visuals to work on a remote machine.

He barged into my office complaining that he could not reliably get the three monitor configuration to work, and he wanted to blame Mr. Lapin as SGI system administrator for . "use of full host names." Mr. Deger was visibly shaking and I calmly asked him to explain ... the problem. Instead, he left that topic and proceed on the system administration support in the Lab. After some rather personal remarks were made I explained that the best way to get support was to ask nicely rather than attack. He then said that most of the time he worked late and there was no one to provide support late at night. Again I explained that Mr. Lapin was in charge of the configuration of the SGFs and that he should take his requests directly to him, and do it in a constructive rather than a combative manner.

June 17, 1999

Mr. Deger sent a very nice, polite email note to Mr. Lapin requesting help with some particular problems he was having. I was so happy with the general tone and construction of the note that I sent Mr. Deger a special note telling him that I thought it was very effective communication and "how proud" I was of the note.

June 25, 1999

I received a phone call from Ruth Johnson at Goddard space flight center with travel voucher questions for Danny Deger. I asked her what travel? It quickly became clear that she was talking about the trip that Mr. Deger had made to NASA Headquarters to speak with Bill Readdy on his way to France. I told her to call Mr. Readdy's office at headquarters, that I had no information on that travel.

Mr. Deger stayed in the office all night last night. He was falling asleep at the workstation. At one point he appeared to be sound asleep in his chair. I woke him and told him to go home and get some rest.

Yesterday he told me that he was officially giving up on his management aspirations, and was no longer wearing a suit and tie.

June 29, 1999

Preparations for a demo configuration of the AET have been going well and Mr. Deger has been very productive preparing new scripts and configurations for the AET. I asked him to work with Jim Brock and Chuck Wheelock on getting a new hand controller configuration that would connect the MSI controller to the Thrustmaster interface. He seemed very pleased, and jumped right on the task. I later heard from Mr. Wheelock that he had a very good conversation with Mr. Deger and that they had come up with some good ideas, including a CDDF proposal to build new hand controllers for the center.

The email notes to Mr. Lapin and other system admins have turned into a barrage of email from Mr. Deger. I talked with Mr. Fridye, and he said most of the requests were basic and suggested that Mr. Deger take some sort of Unix training.

July 14, 1999

Bruce Hilty and I received a note from Mr. Deger explaining that he was running into serious problems with configuring the SGI computers for the Oshkosh show. He was not blaming the system administrators, but he claimed that he needed root access to be able to configure the machines the way he wanted, often in the middle of the night when no one else was around.

I called Mr. Hilty and after a brief discussion he said "give him what he wants". However.
I did not think it wise to give a relative novice root access to our valuable computers. I decided to give him root access but assign a system administrator to stay with him at all times.

When I went down the hall to explain this to Mark Fridye, I was confronted by a wild-eyed Mr. Deger claiming that he could not get the configuration to work without root access and that he was going to give up without it, and there would be no demo for Oshkosh. There was a number of others around and I could tell that i; was a stressful situation for everyone. I explained that I agreed to give root access to Mr. Deger and everyone going to the shows) but that I wanted a system administrator to work directly with him at all times to help him with his problems.

This seemed agreeable to Mr. Deger, but I could tell that Mr. Fridye was still uncomfortable with it I asked him to do it anyway, and assigned Fred Pilkington with Mr. Deger. Fortunately, everything went well and by this afternoon the machines were working fine. I talked briefly with Mr. Pilkington and he said that Mr. Deger did need root access for

anything he did. In fact, all he did was sit there and look over his shoulder and listen to Mr. Deger as he worked.

I stayed late and tested the configuration with Mr. Deger and he made a very strange statement. I told him that he should really get some rest and he replied that he could not sleep. He hit the side of his head saying he tells his brain to "Turn off. Turn off but that it just would not do it.

July 27, **1999**

Much has happened in the last week. On Monday, July 19, Mr. Deger was being disruptive with a loud conversation while I was in a meeting with Mr. Fridye and Mr. Plumb. I could hear Mr. Deger speaking negatively about Mr. Fridye and others in his conversation, so I went out and asked him to please keep it down. We got into an argument immediately and he started to get a loud and accusatory tone. I recognized the pattern and immediately told him to get up, we were going downstairs. He followed and I explained that his continued disruptive behavior was having a very negative impact on the lab. We reached Mr. Whiteley's office and he was not in, so we stepped in Mr. Hilty's office. I told them that I believed Mr. Deger could no longer work in the lab, and we needed to find another place for him. The meeting quickly degraded into an argument between Mr. Hilty and Mr. Deger, which ended with Mr. Deger walking out.

After he left. Mr. Hilty discussed our plans to set up a lab annex in B4S to improve the astronaut's proximity to advanced display prototyping. He asked me to get with the personnel in the astronaut office and see if we could find a desk for Mr. Deger over there.

That afternoon. I took Mr. Deger over to B4S and we looked at a number of rooms for placing equipment and computers. Mr. Deger seemed very pleased with the prospect of moving.

Later that day, I talked with Mr. Whiteley and he said that Mr. Deger had been reassigned and was no longer in my group. He said that he was going to James Ortiz's office within his division.

On Tuesday, July 20,1 had no contact with Mr. Deger, but was told by Mr. Whiteley that he stormed angrily out of the division office soon after he was told that his new office

On Wednesday, July 21, Mr. Deger did not show up for work.

On Thursday, July 22, we received the "How is your health?" email that was directed to Mr. Abbey.

On Friday, July 23, Randy Stone asked me to arrange an all-hands meeting for the division with Ms. Jackie Reese in the EAP to explain what was happening with Mr. Deger. It was a very informative discussion, and we learned "officially" that Mr. Deger is bi-polar and had apparently become psychotic. This disease could be controlled with medication, and that in all likelihood Mr. Deger could return in a month or so and would be very embarrassed with his behavior during his psychotic state.

On Monday, July 26, I received word that Mr. Deger had made phone calls to friend's homes from the hospital. A number of people inquired if Mr. Deger could have visitors. I called Ms. Reese and obtained the process for visitation. I wrote an email note to Mr. Stone explaining this and letting him know that Mr. Deger had government property his this laptop computer that needed to be returned. Ms. Reese explained that the return this property could be taken care of in an agreement for return to employment with Mr. Deger.

Appendix B: Judge Burwell Violates the Law

The following are dated quotes from my health records confirming Judge Burwell refused me my hearing and refused to appoint me an attorney.

On July 23, 1999
"Pt refused to sign in Voluntary, he stated 'I want to go before a judge' …. The patient is too psychotic to write a letter or financial responsibility to courts. Galveston Courts are contacting Judge Burwell regarding the legality of a psychotic signing a contract. Deveraux hospital has completed all requirements for the courts except the letter from the patient, all of our responsibility have been met, we are waiting for Galveston Court to give direction – they no longer will give up a 2nd EAP – waiting for court response."

Later on July 23, 1999
"Multiple phone calls dealing with commitment procedure – (?) a letter of financial responsibility signed by pt or another willing party. PT refused without attn present. NASA EAP referred therapist to father Joe Deger, Alvarado, TX or spouse (pending divorce) Marie Deger mother of 2 small children. "
Note the NASA EAP is Jackie Reese.

Later on July 23, 1999
"Phone call to Judge Burwell to clarify request for letter on financial – she did not know amount either but commitment would not be done with out letter of responsibility ($)"