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Embry-Riddle Aeronautical University

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Boeing rolls out its newest member of the Boeing family. The 737-500 is an impressive addition.
See story page 3

Paul Parme finally succumbs to leukemia after a hard fought battle

page 6

Future shuttle crew member dies in private plane crash

page 5

AVION

An Award Winning College Newspaper

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Embry-Riddle Aeronautical University, Daytona Beach, Florida

July 12, 1989

America remembers...

"One small step for man, one giant leap for mankind.." is 20 years old

by Jose Vazquez
Space Technology Writer

July 20, 1989 marks the twentieth anniversary of the Apollo 11 lunar mission and it allows us to think back and remember what was achieved.

"I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely back to Earth..."

This is part of the famous speech given to Congress on May 25, 1961 by President John F. Kennedy. Kennedy was not all in favor of the "man on the moon" idea when he first entered office. But pressure arose after a devastating defeat in the Bay of Pigs in Cuba, then the foreign policy difficulties with Laos kept increasing, and finally the Russians were leading the space race. Yuri Gagarin's successful flight on April 1961 was probably the one event that made the difference. Kennedy needed a program that could prove that the U.S. had the same technological capabilities or better. Landing a man on the moon would definitely be proof, thus, Project Apollo was chosen.

Planning for a lunar manned mission began as early as April 1957 but it wasn't until the July 28-29 NASA/Industry Program Plan's Conference in 1960 that Project Apollo was approved and publicly announced. Originally, it was first created to introduce a manned circumlunar mission and to achieve U.S. pre-eminence in space.

NASA's budget increased from \$523.6 million in 1960 to \$5.25 billion in 1965. The effort to land a man on the moon was joined by universities, private industries and government agencies. It wasn't just a rocket that could land on the moon, but an all new support system on the ground had to be built including launching, tracking, and recovery.

After some changes on flight crews for Apollo 8 and 10, the Apollo 11 crew was assigned and announced in 1968. Michael Collins was the command module pilot, Edwin "Buzz" Aldrin was the lunar module pilot, and Neil Armstrong was the mission commander. At this time the astronauts, all prior Gemini astronauts, started intensive training for their lunar mission.

Saturn V, the three stage rocket that would make the trip possible, was tested for two years. Apollo 10 had a dress-rehearsal of the lunar module and came within 50,000 feet of the lunar surface. Now everything that Apollo 11 would do had been done, except for the actual landing.

After being cleared for the first formal attempt of a manned lunar landing, the Apollo 11 launch vehicle and spacecraft crawled from the vehicle assembly building to pad 39-A six days before the scheduled launch. The launch window was established by lighting conditions at the landing site on Mare Tranquillitatis, the landing site on the moon. The target day set for the launch was July 16, 1969.

Three days before the mission began, the Soviets launched Luna 15, a probe intended to gather lunar soil



Footprints in time...

Astronaut Michael "Buzz" Aldrin takes a moment to pose beside the American flag. He and co-astronaut Neil Armstrong made America forget it's troubles for a while when they were the first humans to set foot on the moon, twenty years ago next week.

samples and return them to Earth before the U.S. returned from the moon. Luna 15, however, crashed into the moon on July 21 just 500 miles from the Apollo landing site. The attempt of the Soviet Union to steal part of the Apollo 11 glory had failed. The astronauts didn't know about this until their return to Earth.

A few days before the trip, all three astronauts were quarantined. All this was necessary to ensure the health of the astronauts for the eight day flight. It was so strict that only the training associates and their closest relatives were allowed to see them. Even the President was not allowed to visit.

It was a hot and humid dawn at Cape Kennedy the morning of July 16. Thousands of reporters, celebrities, politicians, and diplomats occupied specially erected stands. Further out stood a multitude of thousands of people that gathered to see the making of history. Many had camped out for days.

Meanwhile, the astronauts were being given a final medical examination and had their traditional steak and eggs breakfast.

Then the final moment everyone awaits. The

astronauts were strapped down to their seats and the countdown clock read T-10 seconds. The tension was heavy. At 9:32 a.m. the announcer counted down the final seconds, three, two, one, and Apollo 11 roared louder than a strike of lightning and the silence was broken. The ground trembled as the powerful engines of the mighty rocket thrust the payload toward space. Millions around the world watched the historic moment on television while the rging crowd at the Cape roared with screams, laughter, and tears. The U.S. was only four days away from landing not one, but two men on the moon. The goal set by President Kennedy was on its way of being accomplished.

It was a busy 11 minutes before they were in parking orbit around Earth. For two hours the astronauts checked all systems of the spacecraft before they determined that it was ready to fly to the moon. The engines of the third stage ignited again and a velocity of 35,579 feet per second, more than enough to escape Earth's gravitational field, was reached. Then the one hour task of removing the lunar module was initiated. *Columbia*, the command module, separated first from the third stage and minutes later

Eagle, the lunar module, was ejected by means of springs from the third stage too. This stage was fired into orbit around the sun. After *Columbia* and *Eagle* had docked and were in route to the moon the astronauts went to sleep.

On the afternoon of July 19 the astronauts entered lunar orbit. The next day Armstrong and Aldrin entered the lunar module and while behind the moon, out of contact with Earth, the *Eagle* separated from *Columbia*. As both modules emerged from the far side of the moon, Armstrong said, "The *Eagle* has wings" and started the decent toward the moon.

The decent was smooth like the trip from Earth until two miles away from landing a computer alarm flashed red. The problem was an overload, a minor one. Then Armstrong looked out the window and saw the crater the size of a football field in which they were about to land. At this time he took the manual controls of the module and at 4:17 p.m. EDT on July 20, 1969, the famous words of Armstrong were received on Earth, "Houston...Tranquility Base here. The *Eagle* has landed."

This moment will forever be captured in the minds of the millions who witness the historic event. People all over the world breathed a sigh of relief knowing that the astronauts' first attempt to land on another celestial body was successful.

The sleeping period that was to follow the landing was cancelled and permission was given to start the extra-vehicular activity. As millions watched, at 10:51 p.m. EDT, just hours after landing, Armstrong started down the 9-step ladder on his way to becoming the first man to set foot on the moon. It was 10:56 p.m. when Armstrong set his left foot on the moon and said to the millions of viewers back on Earth, "It's one small step for man...and one giant leap for mankind." With this historic step, Neil Armstrong fulfilled a dream of men from all times and places.

Aldrin joined Armstrong 19 minutes later. The first thing they did was to unveil a plaque fixed to one of the module's landing legs. The plaque read, "Here men from the planet Earth first set foot on the moon July 1969, A.D. We came in peace for all mankind." Together they raised a 3 ft by 5 ft American flag stiffened with wire to appear to be waving in the windless lunar surface. After a telephone call from President Nixon, the astronauts went about for more than two hours collecting a total of 48.5 pounds of lunar soil and rocks. Two experiments were set up and left on the moon, a seismic detector and a laser reflector.

Among the items taken to the moon was a one and a half inch silicon disk with goodwill messages from the heads of 73 nations (excluding the U.S.S.R.), two other American flags (presented to the two houses of congress), a flag of all 50 states and four territories, among them Puerto Rico, of the United Nations, and every nation diplomatically recognized by the United States. The astronauts also carried the torn halves of

see STEP, page 5

SGA appoints new Vice President

by Brian Cerni
Campus News Reporter

After an emergency session of the Student Government Association (SGA) was called by President Jeremy Greenidge, Mary Heitger has been selected as the new SGA Vice-President. Heitger's appointment was necessary after Paul Browne, Greenidge's running mate in the last election, had to resign from the Vice-Presidency for academic reasons. This is only the second time in SGA history that the Vice-President has had to be replaced.

Heitger, a junior in Aeronautical Studies with Management Concentration, was selected from a group of three Student Representative Board (SRB) and Student Finance Board (SFB) members who were interested in the position. Ironically, Heitger ran for SGA Vice-

President against current SGA president Greenidge in the spring elections. Although she did not win, Heitger was appointed to the SRB as an Aeronautical Science Representative. She now vacates that position and it will be filled in the fall through a referendum vote.

As Vice-President, her duties consist of chairing Student Finance Board. This important duty requires a good working knowledge of how the SGA budgeting process which Mary certainly has. She will also be attending the SRB meetings as an ex-officio member. Heitger has been a member of the SFB in the past and feels that her experience will be very helpful as SFB Chairman.

When asked about her relationship with President Greenidge, Heitger said, "We have two different perspectives on things." She added that there can now be more of a balance of power since they did not run for the executive positions together. More importantly, Heitger feels that

this situation will be better for the student body.

Concerning the issue of an SGA student fee increase, Steve Whitmer of the Campus Budget Office contends that the SGA only takes in half as much per student compared with the average across the country. Although Heitger favors a gradual fee

increase to maintain or improve the level of entertainment and ac-

tivities on campus, she says a feasibility study must be done before any increase is proposed. Should the study prove that a slight increase in the already low SGA student fee would be practical, students could expect to see the results of their contributions almost immediately.

Heitger has assumed a great and rewarding responsibility here at ERAU and has a chance to make her mark on the university



Mary Heitger

"We have two different perspectives on things."

Mary Heitger, Vice President, SGA

Student shot, says it should be a warning

by Brian Cerni
Campus News Reporter

Two Embry-Riddle students were held up at gunpoint Sunday, June 25 at 1:15 A.M. after two black males approached their car at the corner of Volusia Avenue and White Street.

Both residing in Dorm One, Bob Matthews and Mark Larson were returning from an evening beachside, when Matthews stopped for a traffic light. The two men approached the passenger side of the car, one holding a .38 caliber gun rapped in his shirt. Larson added that the two appeared to be in their late teens and very nervous as they demanded them to get out of the car.

Acting on an impulse, Matthews accelerated into the intersection and one shot was fired into the car striking Larson in the right shoulder.

Matthews believes that the gunman was aiming at him but the acceleration of the car placed Larson in the path of the blast.

Immediately after the incident, Larson was taken to Halifax Medical Center Emergency where he was treated for a superficial flesh wound and released. A police report was filed at the hospital and a K-9 unit was dispatched to the scene of the shooting but the suspects were not found in the area.

Matthews said that, "Students should be very cautious in the Daytona area," and stressed that the unexpected can happen at any time. Although Matthews feels that the liberal gun laws in Florida do not contribute to the high crime rate, both Matthews and Larson agree that Daytona's tourist industry creates a violent atmosphere.

Inside the Avion this week

Aeronautica	3
Classified	9
Comics	9
Campus News	8

Diversions	6
Space Technology	4
Opinions	2
Editorial	2

Trivia:
In all of the manned space missions thus far the United States has only lost 10 Astronauts in launch related accidents.

Editorial

The poetry of history lies in the quasi-miraculous fact that once, on this familiar spot of ground, walked other men and women as actual as we are today, thinking their own thoughts, swayed by their own passion, but now all gone, one generation vanishing after another, gone as utterly as we ourselves shall shortly be gone like ghosts at cock-crow.

George Macaulay Trevelyan
British Historian
1876-1962

The words of the historian are true for us all. It is human nature to think of those who have gone before and to wonder if we will be remembered.

Embry-Riddle has a 63-year history, one which deserves reflection, one that is sure to be in the pages of aviation history. Less than a month ago, Mary Gail Sink, a 1984 graduate of Embry-Riddle, became the first woman in the United States to become a fully certified airship pilot. Embry-Riddle graduates are destined to be on the cutting edge of the future of aviation and space endeavors. Though it may not seem so important now, someday we will want to remember, and reminisce the path that brought us to this point.

A recent display in Spruance Hall is a small step toward recognizing Embry-Riddle history. Twelve photographs have been restored, showing the early days, when the university we see before us today was just a small dream in the heart of John Paul Riddle.

Perhaps it is the passing of John Paul Riddle that makes us think about cherishing the past and it makes us wonder about the changes that have taken place, a number of them very recently. Seniors remember a very different campus from their freshman days. Alumni from less than 10 years ago are amazed at the changes.

The hard thing to remember is that we are making history as we go about our daily lives. And one of these days we are going to want to remember things the way they used to be. Where are the photos showing the move from Miami, the building of the UC or the GRW complex, or the old runway which was used as a parking lot on the spot where the library now stands?

Yes, some of these do exist, housed in the library in the "Archives". Through no fault of the library staff, these photos, clippings and memorabilia, are in need of proper restoration, organization and storage. One of these days, we'll wish we had taken care of the very special collection which is now housed in our Archives. We'll want to remember and to be remembered.

"If I should die," said I to myself, "I have left no immortal work behind me - nothing to make my friends proud of my memory - but I have lov'd the principle of beauty in all things, and if I had had time I would have made myself remember'd."

John Keats
1795-1821



Letters to the Editor

Thank you ERAU!!

To the Editor:
I would like to express my appreciation to the faculty and staff of Embry-Riddle Aeronautical University. I feel very fortunate and proud to have worked for the university since August 1976. The great benefit of a tuition waiver for my family has provided my children with an excellent education and future employment.
When my family and I first came to the United States, I never thought I would have a family of Embry-Riddle graduates. I believe with all my heart that this institution is one of the best educational programs and the job opportunities a graduate receives are truly rewarding.
For instance, my husband, Sang,

attended ERAU and received his Airframe and Powerplant license and has been employed at Daytona Beach Aviation since 1975. My oldest son, Lawrence, graduated in August 1987 with a BS in Aeronautical Engineering and is working at McDonnell Douglas in St. Louis, Missouri. Another family member, my nephew Donald, graduated with his Master of Aeronautical Engineering and is employed by NASA in Ohio. Just recently, my third son John, graduated in April 1989 with a BS in Avionics and is working at Delta Airlines in Atlanta. My daughter, Martha, is also attending ERAU. She originally planned to pursue a business degree at the University of Florida, but since she had the opportunity to expand into the aviation field at Riddle, she opted to stay here. She is

now in her second year.
As you can see, such accomplishments cannot be achieved without the help of the university and its people. My family and I are more than grateful to all of the faculty and staff who have contributed to our success.
I would like to give very special thanks to Dr. William Motzel and Professor Charles Otis for their letters of recommendation and previous generous assistance to my family in our adjustment to this country.
My thanks must also go to Records and Registration, Financial Aid and the Career Center Staff. I would also like to recognize the talent and effort of the Career Center employees for their dedication to the students. Their productive work surely must be commended.

I know that the future holds more graduates attaining their goals and I am positive Embry-Riddle will continue to play an important role in their lives.
I am very pleased that my family and I could have been a part of this wonderful tradition. My deepest gratitude and respect again to all that have made this possible.
May God bless you.
Martha Tran
CCE
Academic Evaluation

Editor's note: Letters appearing in the Avion, do not necessarily reflect the opinions of the newspaper or its staff. Letters submitted may be edited for brevity and may be printed provided they are not lewd, obscene or libelous. Letter writers shall confine themselves to a single topic.

Student Forum

The Avion Asks: How do you feel the new Piper Cadets should be introduced into the Air Science program?



Barry Stevens
I think the cadets should be introduced to the FA 104 students to prevent a transition problem in the future.



Stacey Cummings
I feel the lower level students (before multi-transition) should be able to choose which route to take.



J. L. Cummings
I believe that initially flying the new cadets should be a privilege. After the students get through FA 105,



Greg Morgan
New incoming students into FA 104 should be started in the new cadets, this eliminates the problem of moving from one aircraft to another.



Ron Buschen
New flight students ought to be introduced and talk to the experienced flight students and instructors. This would give them an idea of what to expect.



Mitch Ilson
I think that the new FA 104 students should have first crack at the cadets. This would keep the transition problems to a minimum.

Anderson and Spears

Terrorists learn their craft at home

ISRAELI-OCCUPIED WEST BANK - Adults may be the leaders of the Palestinian uprising, or intifada, but it is the children who make up the front-line troops.
Fourteen-year-old Nasser is a typical "soldier." The Israelis closed his school because they were afraid it was a breeding ground for young revolutionaries. So Nasser and his friends now learn their combat skills on the streets. They stockpile rocks at strategic locations around their village and wear ski masks and scarfs as their uniforms. When an Israeli vehicle comes along, the children stone it. Sometimes the Israelis retaliate with bullets, giving the intifada another martyr.
Nasser falls into the almost-martyr category. One recent morning he woke up with his usual pre-occupation. "All I could think of was throwing rocks at Jews," he told us.
His target that day was an Israeli garbage truck. He smashed the windshield, and the driver shot Nasser in the head. Today, Nasser the survivor is the talk of his village. And four days after he was released from the hospital, he was

on the streets throwing rocks again.
Palestine Liberation Organization leader Yasir Arafat is the unofficial choreographer of the intifada, and he has banned guns from the struggle. Israelis say that Palestinian men have deliberately pushed women and children, armed only with rocks, to the front of the struggle, as a ploy to gain international sympathy for the underdogs.
But if Nasser and his friends are any indication, no pushing is necessary. They love their real war the way American children love G.I. Joe. In the process, they are learning a hate for Israelis so deep that it virtually guarantees the intifada will continue at least through this generation of youngsters.
The adult organization behind the intifada is shadowy. "The Unified National Leadership" takes credit for the leaflets that are spread throughout Arab villages ordering strikes and demonstrations.
We met with one of the most wanted revolutionary leaders linked to the group and he explained how the Unified National Leadership works. It is a collection of committees staffed by people from disparate groups. Before the intifada

broke out in December 1987, these people had been at each other's throats for two decades, divided by their views about how the Palestinian homeland question should be settled.
They include the followers of Arafat and the PLO, supporters of the Marxist Popular Front for the Liberation of Palestine and assorted leftists and communists.
Arafat rules by suggestion, and the intifada hierarchy doesn't contradict him, even though some are not Arafat fans.
The Israelis have not done themselves any favors in the way they have responded to the intifada. Israeli officials closed the schools, so now Arab children have plenty of time on their hands to throw rocks, Israeli soldiers shoot the rock throwers, and the outside world cries "foul." Israeli bulldozers tear down houses of suspected revolutionaries, and the Palestinians, who are supposed to be intimidated, just get more angry.
The Israelis have further damaged their public relations by bulldozing precious trees in this desert. The Palestinians say Israel has cut down 25,000 trees out of spite. Is-

rael says the number is just a few thousand and that the trees were destroyed because rock-throwers hid behind them.
We talked to one intifada leader who spoke calmly of the uprising until the subject of the trees was raised. Then he lost his temper. "I heard the other day that they pulled up an olive tree that was 300 years old," he said. "This makes me shiver. To kill a man is nothing anymore. But to kill such a tree that has been there for eight generations, which has been watered by countless men who have sweated over its growth, well, this is madness."
ARMY SCAPEGOATING - Army Staff Sgt. William Murphy figures his military career is ruined, and all he did was stand up for what he thought was right.
Murphy was a Russian translator for the Army at a post in Aberdeen, Md. Two of his co-workers, a black man and a white woman, decided they wanted to get married. But the superior officer at the post, Capt. Sheila O'Connor, inserted herself

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This week's staff: All of the Above

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Boeing shows off the 737-500 for prospective customers

by **Kress Latham**
Aeronautica Editor

Boeing's latest addition to the commercial jetliner market, the 737-500, made its successful first flight on June 30, 1989, before a crowd of nearly 11,000 Boeing employees at Renton Municipal Airport in Seattle.

The gleaming silver twinjet rotated at 11:40 AM and began a steep climb into the heavy overcast sky. Command Pilot Jim McRoberts was at the controls with Ken Higgins, Boeing director of flight operations, as co-pilot. The flight over the coast and plains of Washington lasted just over two hours and confirmed that all systems and flight characteristics of the aircraft showed no discrepancies.

In the high speed portion of the test, the aircraft was pushed to Mach .89, a first for the maiden flight of any Boeing commercial aircraft.

Although weather conditions did not permit the crew to perform the high speed dive tests, Ken Higgins said the flight was "a very very good flight, it handled very well."

The 737-500 weighs-in about the same as its predecessor the 200 series, but with CFM56-3 engines that generate about 25% more thrust, the performance figures of the 500 are far superior than those of the 200. Fuel consumption has also dropped 20% less per seat than that of a comparably equipped -200.

With its range of more than 3,000 statute miles, the 737-500 is aimed at providing a replacement for the aging fleets of 727-100 and -200 series trijet aircraft.

As in the other new generation Boeing 737 family members and the larger 757 and 767 types, a fully integrated flight management system is incorporated to facilitate automatic control and guidance.

All 737's are available with EFIS (Electronic Flight Instrument System), which makes use of cathode ray tubes to provide the flight crewmembers with symbolic representations of their primary flight instruments.

Certification of the 737-500 by the FAA is expected in February 1990 after approximately 350 hours of flying time.



Younger sibling of the 757 and 767, the new 737-500 carries with it all the latest in state of the art avionics. High bypass fan engines distinguish it from its predecessor, the -200 and polished aluminum in place of paint on the outer skin provides ease of inspection for stress cracks.

New technology... System detects windshear

The FAA has certified the Honeywell/McDonnell Douglas Windshear Detection Alert and Guidance System on the McDonnell Douglas MD-80 series aircraft, the two companies announced.

The Honeywell/MDC system is the most effective deterrent to windshear-caused aircraft accidents yet developed. This system is fully integrated with other automatic systems incorporated in the MD-80 such as the Honeywell Digital Flight Guidance System, the autothrottle system and the terrain avoidance system among others.

Also, for the first time, an automatic windshear system is fully compatible with the autopilot. Previous designs alert the pilot to a windshear and provide escape guidance by providing pitch commands through the flight

According to Douglas Aircraft company, the system offers airlines a number of "pre-programmable" options, thus tailoring the windshear system to customer airlines' unique operational requirements. For example, individual airlines can select from a variety of visual and aural alerting features, choosing the best for their needs.

Honeywell's MD-80 windshear program manager, Bruce Rowe, pointed out that much of the certification testing took place on a specially constructed "fixed base simulator" (FBS) at the avionics company's Air Transport Systems Division in Phoenix, Ariz. The simulator was used because it is very difficult or impossible to find naturally occurring windshear conditions "on demand" for system development or for purposes

"You just can't go out and spend hours looking for a suitable windshear in order to see if the system works."

Mode S could soon replace both the A and C

by **Kress Latham**
Aeronautica Editor

The FAA has proposed a cutoff date of January 1, 1990 for the manufacture of all mode A and mode C transponders. This motion has been brought into effect to allow the new mode S transponder to be phased into use.

Although analysis of the aviation industry balk at the FAA's deadline of January 1, 1992 for all newly manufactured aircraft to be equipped with mode S, the fact remains that the new transponder is hanging firmly on the industry's horizon.

Mode S is not altogether different from its predecessors, mode A and C. It will operate on the same frequencies-1030 MHz for interrogation signals and 1090 MHz for replies-and its returns will show up on ATC radar screens along with altitude information like its parent, mode C.

The mode S transponder, however, has a longer list of differences than it has similarities to the old units. The biggest difference is that mode S does not wait for the sweep of an ATC radar to produce an illuminated target on the controller's screen. The new unit continually broadcasts its position and altitude, along with the aircraft's registration number which is programmed into the unit prior to installation.

When an aircraft equipped with mode S enters the ATC area, the signal, known as a squitter pulse, is immediately picked up by ATC without the pilot

needing to make the initial call-up. This feature will also work nicely for law enforcement officials in tracking suspected drug traffickers.

Virtually all mode S transponders will be installed in conjunction with the TCAS II system (Traffic Alert and Collision Avoidance System). This setup implicates the use of two antennas, one mounted on the bottom of the fuselage, the other on top. This mounting configuration prevents the squitter pulse from being blanked out by a wing or other part of the aircraft which would cause a loss of contact with ATC or with other TCAS II equipped aircraft.

When two TCAS II equipped aircraft pick up one another's mode S squitter pulses, the signals are interrogated by the TCAS processor units which provides each aircraft with the others altitude, azimuth and range information. If a traffic conflict is detected by the processor units, the TCAS of each aircraft will determine and suggest an evasive maneuver based on the latest information attained from the intruder's TCAS.

Busier terminal areas will find another one of mode S's attributes very favorable. Often their screens become inundated during peak times with a myriad of both mode A and mode C returns. Mode S transponders have the capability of being selectively addressed, one at a time if desired, preventing the "stacking" of aircraft in the radar environment and dispensing with uncertainty among con-

trollers.

Mode S can also play the role of a messenger between the aircraft and ATC through the use of its data link function. The transponder sends, receives and interprets streams of digitally encoded data which carry such information as ATC clearances, vectors, requests to climb and descend, and even such information as ATIS reports, signets, and other weather information. Pilots will have the ability to ask for vectors around adverse weather situations or receive updated weather reports while enroute.

This data link feature also has the potential for reducing frequency congestion. Any pilot is aware of the dangers of misunderstanding a garbled verbal message. With mode S, the pilot may simply refer to a text message displayed on an LED or LCD panel. This technology also opens doors for future refinements to the system, such as panel mounted printers which would provide the pilot with a hard copy of data link information.

The FAA has dictated that the merits of the mode S transponder will effect all of aviation in the near future, however, some of us sooner than others. The regulations state that all air carrier aircraft with more than thirty seats must have mode S along with TCAS-II by December 30, 1991. In the meantime, the emphasis is on compatible ground stations and antennas, without which, mode S will appear the same as mode A and C returns on ATC radar.

director system which the pilot then follows as he controls the aircraft.

The system just certified goes several steps further in that not only is the application of maximum thrust accomplished automatically, near-optimum energy-conserving pitch guidance is provided to ensure the best chance of survivability regardless of windshear direction and velocity. The entire process of windshear detection, alerting, guidance, integration with other MD-80 aircraft systems is automatic. Even control of the aircraft through the autopilot can be accomplished automatically if the pilot so chooses.

The first windshear-equipped MD-88 was delivered to Delta Air Lines in April. The system will be a standard feature on all MD-80 models beginning in the fourth quarter of this year.

While this is the first Honeywell/McDonnell Douglas windshear system to be certified for delivery on new production aircraft, the system will also be available for retrofit on MD-80 aircraft already in service. It will also be available for other aircraft with specific individual application as a Honeywell retrofit system.

of FAA certification. "You just can't go out and spend hours looking for a suitable windshear in order to see if the system works," Rowe remarked. "So we had to create the condition in our laboratory."

Rowe noted that the Honeywell FBS gives "high fidelity," six degree-of-freedom simulation which is in aerodynamic conformity to the MD-80 series aircraft. "In fact," Rowe said, "it's the first time alpha-based (angle-of-attack) equations have been used for an MD-80 aerodynamics simulation. Douglas did a considerable amount of additional wind tunnel testing to get the data we needed for our simulation."

Alpha-based equations are needed to simulate an aircraft's performance at the high angles-of-attack required for windshear guidance development. Cooperation between the two companies was extensive. Though the FBS is located in Phoenix, Douglas had a great deal of input over an extended period of time to enhance the Honeywell-developed optimal-control algorithms that make the windshear system the most effective in the industry.

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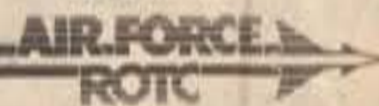
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Titan 4 rocket fills launcher gap

Martin Marietta's newest vehicle in the Titan series will be used to launch heavy and dangerous satellites that the Space Shuttle cannot carry.

by **Derrick Seys**
Space Technology Writer
Due to the Challenger accident, the U.S. Air Force has been greatly concerned with its access into space and has revitalized the use of expendable launch vehicles to assure future access.

was the first launch of the Titan 4 built by Martin Marietta. This launch vehicle has the capabilities to lift payloads comparable to those placed aboard the space shuttle and even heavier.
The launch on June 14 placed an unknown Department of Defense payload into orbit. After the 9:18 a.m. liftoff, Lt. Gen. Donald Cromer stated, "our goal of assured access to

space for critical national security payloads has now been fully met with the addition of this new expendable launch vehicle to the Air Force inventory."
The launch of this Titan went very well. There was an unplanned hold of a little more than an hour to allow the launch team to catch up on some extra work. The flight of the rocket and spacecraft also went well. There was

some indication that the second stage had a slight malfunction in its burn, but the satellites reached their correct orbits and appeared to be in fine condition.
The mighty Titan 4 is a derivative of the Titan 34D. It has stretched first and second stages as well as larger solid rocket motors. The development of the larger rocket came about after the Air Force determined their access into space may be limited.
In 1984 they decided to develop a launch vehicle to protect against the loss of the space shuttle.
The fully stacked assembly stands 204 ft., which is taller than the space shuttle.
To accommodate this large vehicle, launch complex 41 at Cape Canaveral had to be modified. The complex has been undergoing refurbishment for the past two years. Prior to the Titan 4 launch, the pad had not been used since the launch of Voyager in 1977 by NASA.
The future looks to be very active for the Air Force's Titan program. Another pad is to be activated at Cape Canaveral and plans for west coast launches are underway. These pads will be required for the Air Force to meet its scheduled rate of nine Titan 4 launches a year by 1995.
The successful launch of the Titan 4 shows a positive outlook for all future missions into space. It has provided another successful launch vehicle that can alleviate the backlog of spacecraft awaiting to fly due to the Challenger accident.



Columbia was moved to the vehicle processing facility last week where it was mated to the external tank and solid rocket boosters. Mechanical problems have led to delays in the rollout to the pad which is expected to be tomorrow.



Liftoff...
The United States' newest expendable launch vehicle lifts off from Pad 41 at Cape Canaveral. The U.S. Air Force rocket, built by Martin Marietta Denver Aerospace, carried two secret military satellites into Earth orbit. The Titan 4 was developed to fill the backlog of shuttle launches, and will also be used to carry heavy satellites into orbit.

Astronaut Griggs dies in plane crash

by **Michael Fried**
Space Technology Editor
Shortly after 9 a.m. June 17, astronaut S. David Griggs crashed and died while flying his private plane.
The plane went down in Memphis, Tenn. as spectators say Griggs was doing some stunt flying. NASA does not place restrictions on the astronauts while they are preparing for a mission.
Griggs last flew on the shuttle in April of 1985. During that mission Griggs conducted a space walk as he tried to help a stranded satellite.
Griggs had more than 9,500 hours of flying time in a variety of aircraft including highly advanced jets and also helicopters.
Griggs was assigned to a mission on November 19 as pilot for that crew. NASA will replace Griggs on that DOD

mission however it is not known how that will effect the launch date. Normally crews practice six months before a mission in which the flight is within six months.
Griggs was born in Portland Oregon and received a bachelor of science degree from the U.S. Naval Academy in 1962 and a master of science in administration from George Washington University in 1970.
After graduation, Griggs completed three cruises aboard carriers U.S.S. Independence and U.S.S. Roosevelt.
He then attended the Naval Test Pilot School and joined NASA in 1970 as a civilian research pilot at the Johnson Space Center.
In 1978, Griggs was picked in the first group for shuttle astronauts and spent the remaining time training for his mission in 1985 along with development work in designing portable jet packs.



Astronaut Griggs was to fly a mission this November.

STEP

four one dollar bills so that on their return from the moon the halves could be compared to those left at Cape Kennedy and there fore prove that the three men that returned Earth were the same three men that had left Cape Kennedy on July 16.
After hours of gathering samples and testing the human adaptation to the lunar gravity, it was time for the astronauts to return home.
As Aldrin climbed the ladder to the module he threw a small packet onto the ground. The packet contained medallions for cosmonauts Gagarin and Komarov, a crew patch for the Apollo 1 astronauts who never made it into space, and a small gold olive branch. After 21 hours and 36 minutes on the moon, the Eagle blasted from the moon to rendezvous with Columbia and start the trip back home. By morning of July 22 the astronauts were heading home.
The capsule containing the three astronauts plunged into the Pacific at 12:50 p.m. on July 24. The astronauts were then transported to the U.S.S. Hornet to be quarantined for 21 days in case they brought some organism from the moon against which man had no immunity.
The three men that went to the moon were then greeted by parades, honors, award dinners, and finally went on a world tour. The official estimated cost by NASA of Apollo 11 was \$350 million.
It has been 20 years since man landed on the moon and 17 years since project Apollo ended. The space race in which the U.S. has been a predominant runner along with the Soviet Union, has come a long way since Apollo times. New frontiers have been opened and new technologies have been found.
Five more Apollo missions with ten more astronauts who walked on the moon have flown there and back. The wealth of knowledge that the experiments left on the moon and the samples brought back have provided scientists with unmeasurable amounts of data. It has helped man understand where they and their planet has come from.
Since that hot July Sunday when the Eagle landed in the Sea of Tranquility, the moon was no longer beyond reach of men. Americans all over the world raised their heads full of pride. It had been Americans who set foot on the moon, and up to now the only ones.
It was a break in the clouds of turmoil that engulfed the American involvement in Vietnam, the costly social programs in our country, the

see 20 YEARS, page 6

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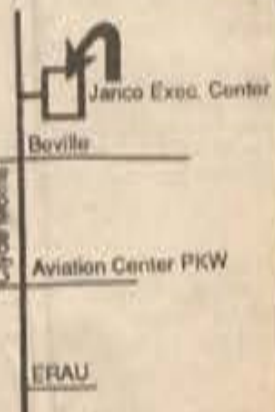
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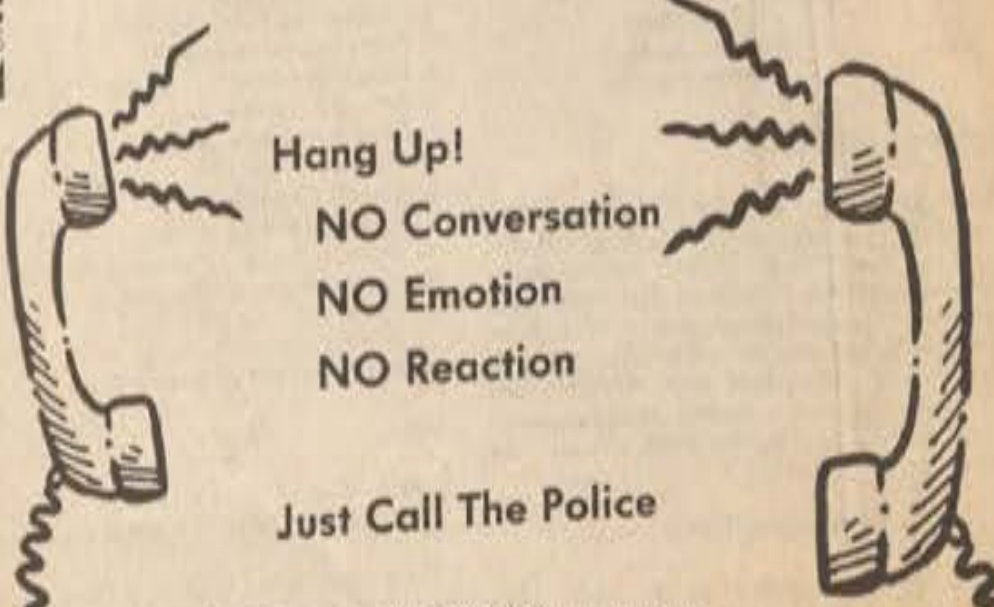
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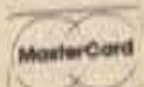
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1984 Alumnae becomes the first woman blimp pilot in the U.S.

by Phyllis A. Salmons
Copy Editor

Mary Gail Sink, a 1984 graduate of Embry-Riddle, recently became the first female airship pilot in the United

States. Sink, who works for Airship Industries, Inc., in Elizabeth City, N.C., said when the opportunity to fly the "Fuji blimp" presented itself, she simply could not refuse. She became a certified commercial and instrument, lighter-than-air - airship pilot on June 20, 1989.

Sink was drawn to the position because of the outstanding opportunities available in the company. Airship Industries, she explained is working in the forefront of technology, with new and innovative techniques, such as the use of fiber optics to activate control surfaces. There will also be great opportunity for world travel, the company having operations in Australia, Japan, Korea, Taiwan, and the United Kingdom.

Sink, 28, originally from Roanoke, Va., knew she wanted to fly since she was nine, when she flew to California for a visit. "At first," she explained, "I wanted to be a professional flight engineer since I've always been intrigued with the way things work mechanical-

ly. That was my goal when I first came to Embry-Riddle. With the phasing out of the professional flight engineer by the airlines, Sink decided to be a pilot. She graduated from Embry-Riddle in December 1984 with a Bachelor of Science in Aeronautical Science.

Her first job was that of a flight instructor at Embry-Riddle, teaching primary and basic instrument students for two and one-half years. During that time she became the assistant chief flight instructor.

Upon leaving Embry-Riddle, Sink became a first officer flying the Fairchild Metroliner (SA 226 and SA 227) for nearly two years out of Lynchburg, Va. She also worked for AvAir/American Eagle in Raleigh and for Nashville Eagle/American Eagle in Nashville. Sink started working for Airship Industries, Inc. in January 1989.

Sink compares flying the Metroliner to "driving a sports car" while an airship is "more like sailing," with a similar feeling of rolling, pitching, and yawing. She says that

flying an airship is "more romantic flying." The primary mission of airship flight is public relations, VFR, low and slow.

The maximum speed of the airship is 50 kts, with a cruise speed of 30-35 kts. Operating altitude is typically 1000-1500 ft, with a certified ceiling of 10,000 ft. Though most flight is VFR, the airship is instrument qualified and can shoot an instrument approach.

"Above 30 kts, the airship handles basically like an airplane," explains Sink, "and below 30 kts, it has very unusual flight characteristics. If both engines are lost, it becomes a free ballooning exercise."

She describes the piloting as "very physical." The gross weight is nearly 16,000 pounds (7100 kg), with the ship holding 6,666 cubic meters of helium.

The skin is made of a polyester fiber covered with a saran film, with titanium oxide protection against ultraviolet radiation. The cabin can hold 15 people comfortably.



Blimpin'...

A 1984 ERAU alumnae is the first woman blimp pilot



Mary Gail Sink

Precision flight team finishes 7th

Embry-Riddle Aeronautical University's Prescott Golden Eagles placed third and Daytona's Precision Flight Team placed seventh at the 42nd Annual National Intercollegiate Flying Association (NIFA) Safety and Evaluation Conference (SAFECON) recently held in North Dakota.

The National SAFECON competition is an annual event which allows NIFA member schools to compete in several ground and flying events including power-on landings, simulator, message drop, aircraft pre-flight and others.

Prescott's Golden Eagles flight team received the American Airlines Safety Award, the Loening Trophy, the Judges Trophy and was ranked third among the 24 competing colleges and universities as

Ground Event Team Champions. Daytona's Precision Flight Team was first runner-up for the Safety Award and received an honorable mention for the Loening Trophy.

Daytona junior Cris Nicholson received the Harold S. Wood Award for Excellence sponsored by the General Aviation Manufacturers Association, the Airline Pilots Association Region 9 Top Pilot Award, and was second runner-up for the William K. Kershner Men's Achievement Award. Prescott student Pat Doyle received the Region 2 Top Pilot Award. The Women's Achievement Award, sponsored by the Ninety Nines, Inc. Int'l., was presented to Prescott student Joanne Julius.

The highest individual scores for Prescott were won by Dave Wright

who placed first in aircraft recognition, and Jeff Koch who placed first in the computer accuracy event and second in the electronic flight computer event. Steven Haddad placed second in the aircraft recognition event and Cris Nicholson placed third in the simulator event.

"It was an exciting and satisfying competition," said Prescott Coach Art Draut. "We are already planning for next year, when we hope to do even better."

Embry-Riddle Aeronautical University is a private, independent institution with an enrollment of about 13,000 full-time and part-time students in Daytona Beach, Fla.; Prescott, Ariz.; and 100 College of Continuing Education centers throughout the world.



Paul Parme

by Phyllis A. Salmons
Copy Editor

Paul Parme, an Assistant Professor in the Aviation Maintenance Technology, passed away at 5:20 a.m. Tuesday in the Halifax Hospital. Parme suffered from acute leukemia which was the result of a "quickened fast-acting" anemia, making his body unable to produce a sufficient amount of white blood cells and platelets.

Blood transfusions had become a daily routine for Parme, along with intravenous antibiotics. The American Red Cross and the Embry-Riddle Chapter of Sigma Chi had sponsored two blood drives on campus in his behalf, the one last January netting 54 pints in approximately three hours, and the one in June grossing 61 pints in five hours.

Earlier this year, the disease took everyone by surprise, since Parme began teaching during the Spring

Paul Parme loses battle with leukemia

semester. A student said that about three days into the term, Parme had a doctor's appointment, and shortly thereafter was in the hospital. The first emergency blood drive in his behalf was held on Jan. 18.

Parme had been hospitalized this time for approximately six weeks in an attempt to allow his body to maintain an acceptable production of white blood cells and platelets. Earlier this year, he had established an equilibrium putting him in remission, but his inability to maintain a stable temperature had caused a lapse in the remission.

Parme became a member of the Embry-Riddle faculty in 1978 and was recently recognized by the university for ten years of distinguished service. Parme's area of speciality was teaching courses concerning aircraft engines.

Parme spoke highly of Embry-Riddle students saying, "they are the finest quality." He said that after having served 20 years in the U.S. Navy, coming to Embry-Riddle was "the best thing I ever did."

Parme spent 20 years in the Navy, working as an Aviation Machinist Mate for 10 years and as an Aviation Fire Control Technician in Electronic Bombing System for another 10 years. After leaving the Navy, he taught for 14 years at a private technical school in the

northeast. He attended the University of Pittsburgh, and has taken several courses at Embry-Riddle. According to those close to him, he wanted very much to complete a degree at Embry-Riddle.

Parme was a charter member of the Professional Aviation Maintenance Association (PAMA) and was very active in St. Brendan's Catholic Church.

Just last week, a colleague of Parme had visited, saying that he was in good spirits and looking forward to getting back to work. A representative of the American Red Cross said, "He put up a great struggle."

Paul Parme spent the past 45 years working in the field of aviation, first serving his country, and then serving the youth who dreamed of being a part of the world of aviation. His love of aviation and his dedication to this University make his passing an especially sad one for all at Embry-Riddle.

Parme is survived by his wife Marie, son Paul, and daughter Marie. Dale Woodward Funeral Home, 1780 Ocean Shore Blvd., is in charge of funeral arrangements. The family will be receiving friends this evening. Further details may be found in the *Daytona Beach News Journal*.

20 YEARS

(continued from page 5)

domestic racial war, and the largest deficit in the federal budget since World War II. In a time when everything seemed to go wrong, the U.S. had done something right.

Today the moon is a symbol of romance for lovers, mysticism for astrologers, or just a plain bright, glowing sphere for many people. It goes unnoticed for millions; it seems to be taken for granted. But

for the dreamers who reached out for it, the millions of Americans who made it possible, and the three courageous astronauts of Apollo 11 who embarked on an adventure that represented the American way of life, the moon does not go unnoticed. For them it symbolizes hope for peace and the realization of an everlasting dream.

Just as the first pilgrims sailed in

the Mayflower to this great country in the spirit of freedom and colonizing new lands, the Apollo 11 astronauts flew in the *Eagle* to the moon in the spirit of colonizing it and propagating freedom through out the universe...It was Americans that flew aboard Apollo 11 and first set foot on the moon, but they were also men from planet Earth who went "in peace for all Mankind."

CLASSIFIED AD POLICY

- Non-commercial classified advertising and personals are free to the student body, faculty and staff of Embry-Riddle with a 35 word limit.
- All other non-commercial advertising is \$10 with a 35 word limit. Each additional word is 10 cents.
- Commercial advertising is available through the *Avion* advertising department.
- Classified advertising is carried out by filling out a classified ad card in the *Avion* office.
- Only one classified ad per card. Name and address of advertiser must be included for the ad to run.
- Ads will run for two issues and may be renewed by filling out another classified ad card.
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- For more information, stop by or call the *Avion* office at (904) 239-6049.

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I do!
And I love you!
Mrs. Wonderful

Happy Birthday to you.
Happy Birthday to you.
Happy Birthday Dear David,
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Have fun on your slide down!

Jeff,
You are my inspiration, and my companion for life.
Thank God for you.
Your Eagle

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A troubled student

ANDERSON

into the romance. The story is told in documents from an Army investigation into the case:

In affidavits the bride's relatives say O'Connor called them, without consulting the bride, and asked if they were aware the groom was black. When the bride requested leave for the wedding, O'Connor said no. The bride, an Army private, filed a complaint against O'Connor.

Murphy, who is white, didn't like what he saw and circulated a petition around the post drumming up support for the young couple. In the meantime, the Army investigation cleared O'Connor of

any racist motivation for her actions. The couple got married. Now Murphy is the only one with a problem.

Because he spoke up for the couple he was reprimanded for showing disrespect for a superior officer and branded as disloyal. Once a promising linguist, now Murphy does menial tasks, chauffeuring Army brass and carrying paper from office to office.

Two senators and a congressman are outraged about what happened to Murphy and are demanding that the investigation be reopened.

Notices

ZIP Code Change

Due to the tremendous population growth experienced in the state of Florida, the U.S. Postal Service has announced ZIP Code changes for areas such as Daytona Beach, which will include mail service to Embry-Riddle students, staff and faculty. While the official change date is July 1, 1989, all mail user are encouraged to immediately use the zip code of 32114.

Graduating Seniors with loans

If you have borrowed from the Perkins/National Direct Student Loan Program and anticipate degree completion during Summer A or B term, you must complete an exit interview before leaving the university.

An exit interview is required by the U.S. Department of Education for every student loan borrower under the Perkins/NDSL Program during his/her last semester of enrollment as at least a half-time student. The purpose of the exit interview is to provide you with repayment terms for your student loan(s) as well as benefits available to you during repayment of your loan(s). It is very important that you be fully aware of your Rights and Responsibilities as a student loan borrower to avoid any future possibility of default.

If you are anticipating degree completion by the end of Summer B - group meeting scheduled for August 10, 10 a.m. or 3 p.m., Davidson Theater, A-Building. You must schedule one of these sessions by calling the University Collections Office at 239-6040 and making your appointment for attendance!

If you have questions, please call Sherry Cunningham, University Collections, 239-6040.

December '89 Graduation Applications

Applications are being accepted at this time. We will try to process as many as possible with a preliminary graduation evaluation before this term is over.

This may be done at the Registration and Records Office located on the second floor of the UC annex.

If a prospective employer requests a transcript for a job interview, we must have a written request from you before information can be released. Stop into the Registration and Records Office and see us about request forms. After you leave, NO REQUEST can be done without a written request and a \$2.00 fee, if an Official Transcript is needed.

Test Taking Tips

Learn ways to prepare for tests, combat anxiety, and take exams efficiently. Wed, July 12, 1:30 p.m. - 2:30 p.m. in the Common Purpose Room of the University Center.

Self-Management and Motivation

Learn how to manage your time so that you can relax without guilt. Also learn how to get going when your get up has gone and went. Wed, July 19, 1:30 - 2:30 p.m. in the Common Purpose Room of the University Center.

Lecture Note-Taking

This session will provide information on how to efficiently take legible, helpful lecture notes. Wed, July 26, 1:30 p.m. - 2:30 p.m. in the Common Purpose Room of the University Center.

Free Tutors Available

The Mathematics and Physical Science Department provides free tutors from 10:30 a.m. to 3:30 p.m. weekdays in room A-106.

Library hours for Summer B '89

Mon-Thurs 7:15a.m.-10p.m.
Fri 7:15a.m.-6p.m.
Sat 9:00a.m.-6p.m.
Sun 1:00p.m.-10p.m.

Avion needs reporters

The *Avion* is looking for reporters. The Campus news section covers news stories that effect the Embry-Riddle Campus. The Space Tech Section covers stories affecting the different space programs. The Aeronautics section presents information about all areas of aviation. The Diversions section provides information about all local entertainment. If you have some free time, and you would like to write for us, contact David O'Donnell at Extension 6049 or stop by the *Avion* office on the second floor of the U.C. next to the Career Center.

Avion needs photographers

The *Avion* needs photographers for summer B and a Photo Editor for Summer B. If you have some free time, and would like to do some photo work for the *Avion*, contact Brian Gerk or David O'Donnell at extension 6049, or stop by the *Avion* office on the second floor of the U.C. next to the Career Center.

FAA Written Exams

Embry Riddle Aeronautical University will administer FAA pilot and/or instructor exams for the following:

Exam	Questions/times allowed
1. Private Pilot-Airplane	50/6 hrs.
2. Commercial Pilot-Airplane	100/5 hrs.
3. Flight Instructor-Airplane	100/6 hrs.
4. Fundamentals of Instructing	50/4 hrs.
5. Ground Instructor-Basic	100/6 hrs.
6. Ground Instructor-Advanced	100/6 hrs.
7. Airline Transport Pilot-Airplane	100/6 hrs.
8. Aircraft Dispatcher	100/6 hrs.
9. Instrument Rating-Airplane	60/6 hrs.
10. Flight Instructor-Instrument Airplane	50/6 hrs.
11. Ground Instructor-Instrument	50/6 hrs.
12. Flight Engineer -Basic	50/6 hrs.
13. Flight Engineer-Turbojet-727	50/6 hrs.
14. Flight Engineer-Turbojet/Basic-727	100/6 hrs.

Date Time Place
July 7, 14, & 21 at 0900 in A-111
July 29 at 0900 in H-113. GRW Complex

Students intending to take an FAA written exam are required to sign up in Office D-200 or call extension 6800 prior to the examination day.

At the time of the examination, the student will be required to bring a receipt from the Cashier's Office, a Written Authorization Form and present a Personal Identification.



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miles, immaculate condition, blue & white,
performance handle, matching shoes, rain suit
& lots of extras. Runs great, selling for car
\$2900 or best offer, call for Chad or leave
message at 756-9238.

1980 Vespa Bike - white, low mileage,
200cc, 2 cycle engine. Runs great. Asking
\$375 negotiable. Call Jack on 258-8959 be-
fore 1 p.m.

1981 Suzuki 550 G.S. Good condition. Must
sell \$600 or best offer. Call Joe, Jim or Mark
at 258-1332.

1981 Yamaha SP250. Lights and beaker
good. Runs. Cheap transportation for only
\$120. Call 252-7870 days.

Motorcycle - 81 Suzuki GS850GL 8000 mi.
\$1000/best. 761-7836.

Motorcycle for sale. 1972 Yamaha TX 750
Runs good, looks bad. \$350 Call 255-1477

1985 Honda XL 350R 4 stroke Excellent
condition. Asking \$1,100 o/b/o.

Misc. for sale

FOR SALE: Apple III, like new, with
graphics capability and thousands worth of
software. Moving, so it must go - need the
cash.
Call to make me an offer!
David at 258-6137, leave a message.

Dinette set - brass frame with glass top and
brass chairs with rust colored pillows, \$300;
3 table living room set, \$350; matching
dresser and nightstand \$225; 2 matching
bedroom chairs \$100. Call 257-2594

FOR SALE: Sony D-10, Portable CD player.
Includes: 4.5 hr rechargeable battery pack
(new); wired remote control (wireless ca-
pable); random programming of 21 songs; 4
repeat modes; 1 all A-B, shuffle; Sony
MDR V2 Headphones; Asking \$200. Call
Francis at 252-5434 or 557-4067.

Refrigerator. Used two years \$100 Call
Mark 761-7836.

Car Stereo. Sherwood CRD-175, AM/FM
Cassette, auto reverse, music search, drift,
metal, CD inputs. Two infinity 6 x 9 speak-
ers, 3-way 70 W. Targa 7-band equalizer,
SOW. \$300 complete. Call Phil 767-2928.

Kenwood stereo system: 120 W amp with 8
point EQ, digital tuner, dual cassette deck
with Dolby NR, turntable, and ADC compact
disc player. Includes speakers and cabinet.
Excellent condition. \$950 or best offer. Call
767-3544, leave message.

Waterbed - King size, 6 drawers headboard,
sheets, pillow. Stead \$75. 761-3893.

Windsurfer for sale. Mistral Talus. Excellent
Condition \$450 obo. Call Andy 788-7837.

Furniture for sale. Purchased new, 2 years
old, excellent condition. 6-pillow L-shaped
couch with foldout Queen sized bed. \$275.
Dinette set - brass frame with glass top and
brass chairs with rust colored pillows, \$300;
3 table living room set, \$350; matching
dresser and nightstand \$225; 2 matching
bedroom chairs \$100. Call 257-2594.

FOR SALE: Men's 1/4" Parkway wet suit
\$100 or best offer. Call Doug 258-5974.

FOR SALE: Queen size waterbed. Great
condition. \$250, 1 sleeper sofa - great
condition \$175, kitchen table and 2 chairs \$125,
1 twin bed - \$125, 1 Duesler \$100. Call
677-1720, Ask for Dave.

Keyton Clarinet, Chrome w/ black, set of 4
Mounted P233 60R 14" Daytonia Radials,
5,000 miles. \$600 firm, Call 6787 or 788-
7278.

Kenwood Stereo System: 120 Watt AMP w/ 8
point EQ, digital tuner, dual cassette deck,
turntable, and ADC compact disc player. In-
cludes speakers and cabinet. Excellent con-
dition. \$750 or best offer. Must sell! Call
767-3544.

For sale - Black and white TV. \$125.99 or
best offer. Box 3381 - leave note.

FOR SALE - Hideaway sofa - \$80.00. Fi-
sher stereo \$50.00. Call Phil at 257-2524

For Sale - 1/10 scale RC car - (ready to go).
Great for the beach. Many spare parts and
motors. Enough to almost build 2 cars.
Runs over 30 m.p.h. Over \$400 invested,
sell for \$250. Call 760-0660.

For Sale: "No Down Payment Seminar" - by
Ed Beckley. A program for creating a real
estate empire from nothing down. Includes
eighteen cassette tapes and outline only \$125.
Call 255-9170.

For sale: Lotus 12-speed excellent condi-
tion. Top of the line, racing components,
Great for racing or touring. Worth \$600,
sacrifice for \$300. Call 789-0660.

For sale: Security Shale for rear hatch area.
Fit '82 to '89 Camaro/Firebird. New in
box, never installed. With all hardware.
\$750.00. Call Kevin, 761-6200 or Box
#8493.

Free Couch!!! If you move it, you can have
it! Call 767-1864. Ask for Kathy.

For Sale - Red "Bumpin'" Bandit helmet.
Good condition - asking only \$125. Call
255-9170.

Keytronic Keyboard - 101 keys for PCXT,
AT and Compatibles. New condition \$55.
Call 761-9384 or Box 6722.

Computer for sale. Apple III - Monochrome
monitor, keyboard, dual disc drive. Asking
\$550. Call 255-1477.

For Sale: Stereo w/ cabinets and speakers
\$125. Twin bed frame and mattress \$50.
Dresser w/ mirror \$50. Tall dresser - \$30.
Small Chest of drawers \$15. Large trunk
\$10. Antique Armoire \$200. Coffee table
\$25. High-back wicker chair \$25. Raleigh
10 speed \$50.

10 speed mountain bike \$50. Darcy Weight
bench & weights \$100. 8.5 m² Aerotech Sail
\$110. Windsurfing lessons \$10/hr (includes
everything). Call Dan 255-8853.

Rail buggy for sale. Great Beach center.
Call Andy \$1000 obo. 788-7837.

Motorcycle/boat Trailer, fresh paint, built
in loading ramp, single rail, brand new tires
& wired. \$300. Call for Chad or leave mes-
sage at 756-9238.

Estate Sale
On the river. One bedroom, one bath condo.
Enjoy the sunset and boats from your bal-
cony. A fun place to live, sauna, pool,
no-rust, shuffle board. \$7,900. Furnished.
Call Harmon Realty.
255-9508

Miscellaneous

Professional Word Processing Service. Fully
edited and spell checked. Tech reports, term
papers, resumes, cover letters. Full service.
\$1.25 double spaced page. Call Mary ext.
6232 or 767-0718 after 5:30.

Dive into summer! Take a break to go scuba
diving. Fixing specialty classes in under-
water photography - wreck diving - deep
diving. Get adventurous! Call Sharon 788-
8052.

Wanted: scuba divers! Are you good but
want to be better? If you want more out of
your diving because an expert in such areas
as navigation, deep and night diving. Call
Paula 788-8052.

Wanted: Looking for Scuba gear.
BCD/regulator/tank. All or any. Call Mark
255-2725, box 2093.

Professional window tinting. Warranty work.
Professional film and installation. Student
discounts. Save the interior of your car and
yourself from the heat. Call 760-6738. Ask
for Mark.

Wanted: one mini tape recorder. Call Doug
258-5974.

Wanted: Radio controlled glider 3-channel
w/ small gas engine. Call Doug 258-5974.

Cooperative Education - Do you want to
earn credit towards your upper-level open
electives? If you have at least 30 credit
hours with a minimum 2.5 GPA and would
like to learn while you gain experience in
your degree program, contact the Co-op of-
fice in the Career Center, ext. 6054.

Engineering
Co-op Position - H. L. Yon Co., St. Louis,
Mo. - CAD operator to assist in running
CAD tube in order to produce aircraft struc-
tural parts; Intergraph or Unigraphics sys-
tem. (This is a contract engineering firm.)
US citizenship is required. Contact the Co-
op office in the Career Center for more in-
formation. Ext. 6054.

Engineering
Co-op Position - Air Force Flight Test Cen-
ter - Edwards AFB California. Engineering -
Flight Testing, US citizenship with excellent
communication skills and a GPA of at least
2.9. Contact the Co-op office in the Career
Center for more information. Ext. 6054.

Co-op Position - Eastern Airlines, Daytona
Beach Airport - Quality Assurance Intern -
Audit all facets of ground handling w/ com-
pany provided guides. No pay, but you will
receive a trip pass for each 40 hours of work.
Contact the Co-op office in the Career Cen-
ter for more information. Ext. 6054.

Professional In-Lab Tutoring in Cobot. In-
cludes all aspects of documentation and pro-
gram design. Reasonable hourly rates. Call
Tim at 258-8501 to set up an appointment
for an initial consultation.

Need to pass MA 111 or MA 112??? If you
definitely want to pass MA 111 or MA 112,
don't hesitate! Call: 673-6492 now and se-
cure a passing grade this summer!

German Car Repairs. Prof. services on VW-
AUDI - Bug, Rabbit, Golf, Scirocco, Jetta,
GTI, Fox, 4,000 and 5,000. Factory trained,
10 years of experience. Suspension, struts,
brakes, boost injection, routine maintenance,
engine overhaul and competition equip.
Only \$14.00/hr labor for BRAU students.
No mark up on parts. Contact Rob Wartick
at 238-0386 or Box 2193.

Business and Management Students, express
your interest. John Lake, SGA Representa-
tive. Box 7089

Restore and preserve the paint on your car
for the rest of your life. For details call 760-
0660

Engineering graduate willing to tutor math
or physics at reasonable rates. Call 760-
6510 or leave message in Box 4281.

Responsible individual with references and
transportation available for babysitting and
house sitting. Please call 257-6126.

Wanted: Airline ticket Daytona/Orlando
round trip to I.A. Call Doug 258-5974.

Discover scuba diving. Lifetime P.A.D.I.
International certification \$100. Learn on
campus! Advanced courses available. Call
Jan 761-2021.

Roommates

For rent, near college. Quiet private locked
front bedroom. Shared apartment, utilities,
furnished, central air, cable, laundry, non-
smoking, male \$55 week. 788-2951.

Spacious, Quiet, 2 bedroom, 2 bath apt. Own
room with connecting bathroom, walk-in
closet, cable and water free - microwave and
dishwasher. Pay half electric. Four miles to
BRAU \$205/month. Call anytime 239-0432
or Box 2054.

Roommate needed - starting summer II to
share 2 bedroom apt near BRAU. Facilities:
tennis courts, pool. Expenses around \$200 +
1/2 utilities. Non-smoker, no pet, quiet per-
son. If interested, please contact Karique at
760-0744 or leave message in Box 1112.

Room-mate wanted
Wood forest - pool, tennis, racquet ball, ca-
ble.
1 mile from BRAU, near Valusia Mall
190.00/Mo + utilities
call 255-9595

Room for Rent in prestigious Port Orange.
Four miles from BRAU. Walking distance
from public library and bus stop. Ca-
ble, garage, central air, dishwasher, disposal.
\$195.00/month + 1/2 utilities. Call Jeff 767-
5917. Leave message.

Townhouse for sale
Near BRAU at 142 E. Baywood Square,
Forest Lake Subdivision, off Beville Rd.
between Clyde Morris and 1-95. 1 story, 2
bedroom, kitchen appliances, cathedral ceil-
ing, ceiling fan, utility/laundry room, large
walk-in closet. Pool, club house, lake. No
yard work. Central heat/air \$53,000 - call
788-6616.

2 Bedroom, 1 bath condo in a 4 year old
complex. The unit is in a 4-plex, downstairs
and on the end. Carpentry, window treat-
ments and a washer/dryer connection in the
kitchen. A screened porch, and a large as-
sumable mortgage. Swimming pool. Ask
\$48,000
Ask for Sonja
Harman Realty 255-9508.

Roommates wanted. Need two roommates to
share 3 bedroom, 2 bath apt. Must be non-
smoker, non-partier. Rent is \$165/mo + 1/2
utilities. Will have own room, microwave,
dishwasher, water's free. Two miles from
campus. Call Maribel 252-4566.

Neatly, newly constructed Townhouse for
sale at 142 Baywood Square, Forest Lake
Subdivision off Beville Road. One story, 2
bedroom, with pool and city water, sewer
and trash collection. Central heat/AC.
\$53,000. Call 788-6616.

Condo on the River
Two bedroom, two bath, beautifully fur-
nished and ready to move in. Pool, sauna,
recreation room, shuffle board, great view-
sity. The sunsets from the balcony is a pic-
ture every day.
Priced right at \$82,500
Ask for Margaret.
Near Downtown.

Room for rent in a 3 bedroom, 2 1/2 bath
condo. \$250/month including utilities.
Washer/Dryer, pool. Box 2053 or 788-5505.

Furnished Room for rent - only 1/2 mile
from BRAU. Rent includes Electric, wa-
ter, heat, air, washer/dryer, dish washer, mi-
cro-wave oven, cable tv, private driveway -
clean home. No lease is required. Only
\$225 Monthly.
Call 255-9170

Ocean West Condominium
Beautiful panoramic river/ocean view from
16th floor. One bedroom fully furnished in-
cludes kitchenware and linens. Asking
\$78,000. Call 767-0433.

Room for rent: Best beach traffic, live in
Port Orange. 4.5 miles from BRAU.
Walking distance from public library and
bus stop. Cable, Washer, Dishwasher, Dis-
poser, Garage, Central air. All the comforts
of a 3 bedroom home. Must be neat. \$195
per month + 1/2 utilities, plus deposit. For
more info contact Jeff Box #4217 or 761-
8801.

Efficiency.
Connected to home. \$290 per month. No
utilities. All house privileges 5 minutes/ 1
mile from campus. 1 block from DBCC.

Room for rent.
\$250 per month, 1/4 utilities, 5 minutes/1 mile
from BRAU. New Home, Fully Furnished.

Room for rent - Summer II Only.
1/2 month (nego).
1/2 utilities. Furnished room and waterbed.
Pomona Glen luxury Townhomes, Nova Road.
Hot deal. Don't miss it.
Contact Mike 238-1480 or leave message at
Box #5937.

Clean room for rent. Own room and bath-
room. TV room (cable), air conditioned,
furnished, and quiet. Must See.
\$225 + 1/2 Utilities. Call for appointment
(904) 673-8680.

Room for rent.
Brand new 3 bedroom, 2 bath house in Port
Orange. 8 miles to BRAU. Your own bed
room with attached bath. Washing/drying
facility. \$275 per month. All utilities in-
cluded. Call 756-2377.

Room for rent
- 1 room available July 1st (\$175), private
bath, AC, ceiling fan, large furnished house
on river, equipped kitchen, dishwasher, ca-
ble, beach side, 150 ft. dock, plenty space.
1st & last month's rent, utilities @ \$35 -
\$45. Contact 258-0852