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SPACE TECHNOLOGY

Space initiative helps soldiers in Operation Desert Storm



We know where you are, Saddam...

Since the beginning of the Middle East crisis, satellites orbiting 22,000 miles above the planet have been monitoring Iraq's every move. This photo was taken during the *Astro* mission aboard the Space Shuttle *Columbia* in December.

by Joshua S. Mussaf
Space Technology Editor

While forces fight on the ground, air and sea, satellites are assisting in the war effort, thousands of miles above the war zone. Satellites are providing an essential edge to war fighters.

In the 1980's alone, the U.S. Defense Department bet more than \$100 billion on that premise, gradually accumulating a massive set of military satellites and associated ground equipment to boost the effectiveness of its forces.

The constellation of U.S. military satellites includes

spacecraft that can produce detailed images of the Iraqi military forces, listen to their broadcasts, watch for launches of Iraqi missiles, relay communications between U.S. military units, pinpoint the location of U.S. troops and track the progress of sandstorms and other crucial weather phenomena.

The Pentagon has rushed to equip the troops with space-related ground equipment, such as receivers for navigational and weather broadcasts. Also, launches of several new military satellites, although planned long before the crisis, expanded the satellite services available to the troops. Finally, ground controllers carefully husbanded those satellites already in orbit, including partially reviving a failed navigation satellite just hours before Operation Desert Storm began.

The Navstar Global Positioning System is depended heavily upon by the U.S. Navy and U.S. ground troops in the region. Particularly popular are lightweight Navstar receivers, small enough to be held in one hand. Since the onset of the Middle East crisis, the U.S. Army has ordered more than 8,000 of these units.

The Satellite fleet also includes at least one Magnum and one Vortex spacecraft, permanently parked over the

region at an altitude of 22,000 miles, which can record foreign radio transmissions. One Defense Support Program satellite, with infrared monitors attuned to detect the heat from a burning rocket engine, continually scans for launches of Iraqi ballistic missiles.

An Intelsat spacecraft is serving as the primary pipeline for U.S. news broadcasts out of the Persian Gulf region. The U.S. Department of Defense also has leased one of the six transponders on the spacecraft.

Satellite services have served as a critical, reliable link to relay news reports from the Middle East to television viewers around the world. Small, portable dishes are being used to relay news video to the

United States from sites in Saudi Arabia, Jordan and Israel.

The three major U.S. television networks, Cable News Network, a reporters' pool and the Defense Department, each have leased one of the six Ku-band transponders on the satellite beam.

As long as the military continues to proceed with Operation Desert Storm, satellites will continue to provide assistance to the troops fighting in Kuwait, Saudi Arabia and Iraq.

The three major U.S. television networks, Cable News Network... each have leased one of the six Ku-band transponders on the satellite beam.

Discovery prepares for first unclassified flight

By Michael Fried
Space Technology Writer

NASA's next launch of the space shuttle is set to occur in early March, starting off another year of achievements. This launch is unique in that it will be the first unclassified Department of Defense mission.

The orbiter stack was moved to the launch pad February 15, atop the mobile launcher platform. As NASA continues with the launch preparations, the liftoff date should be released by the end of this week based on the flight readiness review. The *Discovery* will lift off with a crew of seven on an eight day mission.

One of the payloads is designated AFP-675. It consists of five experiments mounted on a pallet structure that will remain inside the payload bay for the duration of the mission. AFP-675 will collect data on the aurora, Earthlimb, celestial, and the shuttle environment. This structure will be most apt in the payload bay. Commands will be sent via a control panel in the aft flight deck.

The next major payload will be the Infrared Background Signature Survey (IBSS). This SDI payload will collect data on shuttle exhaust plumes, the Earthlimb, Aurora, Earthscan, Chemical/gas release and celestial sources. This experiment is mounted on a support "truss" structure called the Shuttle Pallet Satellite (SPAS II). SPAS I flew on STS-7 back in 1983 which gave NASA the unique opportunity of seeing the shuttle from another vehicle. The release of the SPAS will allow its onboard cameras to take data using various frequency cameras, such as Infrared and visible.

The second part of this experiment will be in the cargo bay after its retrieval by the remote manipulator arm. Mounted on the starboard side of the bay is the Chemical Release Observation (CRO) system which consists of three subsatellites in special canisters. Each subsatellite contains a different gas which will be released. The equipment on the SPAS will then

look at the gas to measure data. The subsatellites will be spring ejected.

On the port side of the payload bay is the CIV which is again a gas release system, but this will remain fixed to the orbiter.

The next payload which will be most forward in the cargo bay is the Space Test Payload (STP-1). This consists of five experiments mounted to a structure. These experiments for the Department of Defense will be measuring the environment inside the shuttle and performing measurements on the ultraviolet light.

All these experiments have connections to the military. The data may someday help identify plumes for missile launches.

Inside the shuttle, mounted in the middeck, will be the CLOUDS IA and RMI III experiments. The first deals with the photography of clouds and the second involves measurements of ionizing radiation.

The crew for this flight is commanded by Coats, piloted by Hammond, with mission specialists

Bluford, Harbaugh, Hieb, McMonagle and Veach.

This mission will be inclined 57 degrees to the equator which will allow the astronauts to view most of the Earth's surface, including the Persian Gulf area.

Discovery is currently on the pad being prepared for launch. NASA has not set a launch date but is planning for an early March liftoff. The flight readiness review is set for Thursday and Friday.

Of course, the major topic now is the cracks found in the External Tank umbilical doors. Technicians found these cracks on the door hinge. The concern is that the doors will not close properly before reentry. The doors are located on the belly where most of the aerodynamic heating occurs.

At the Johnson Space Center, engineers have done an analysis of the doors and have determined it is safe to fly.

Additional testing has also been done on *Columbia* which was found



Ready to go...

The crew of STS-39 are Astronauts Charles L. Veach, Donald R. McMonagle, Gregory J. Harbaugh, Michael L. Coats, L. Blaine Hammond Jr., Richard J. Hieb and Guion S. Bluford Jr.

with similar cracks. The cracks are believed to originate from the unexpected high number of door cycles while on the ground. The cycles are a result of routine maintenance in that area. This may force NASA to change the hinges after a certain number of cycles has been reached.

This mission will mark the first for the year, with the Gamma Ray Observatory (GRO) to follow in April. *Atlantis* will fly that mission and is set to be rolled over to the Vehicle Assembly Building next week. *Atlantis* has yet to show signs of any cracks.

Design of mission patch aims skyward

by Michael D. Fried
Space Technology Writer

The arrowhead shape of the STS-39 crew patch represents a skyward aim to learn more about our planet's atmosphere and space environment in support of the Department of Defense. Our national symbol, the eagle, is represented by the star constellation Aquila as its brightest star, Altair, lifts a protective canopy above Earth.

The Space Shuttle encircles the spectrum which represents x-ray, ultraviolet, visible and infrared electromagnetic radiation to be measured by a variety of scientific instruments. Experiments will be operated within the cargo bay and aboard a free-flying satellite which will be deployed and retrieved during the mission. The patch was designed by the STS-39 crew.



Extraordinary...

The official mission crew patch of STS-39 was designed by the astronaut crew. The arrowhead shape represents a skyward aim to learn more about planet Earth.



One day...

The construction of the Space Station Processing Facility is set to begin in April at the Kennedy Space Center. The processing facility will be used for payload processing of elements of Space Station *Freedom*.

Construction of space station facility to begin

(NASA News) Kennedy Space Center - NASA's Kennedy Space Center has awarded Metric Constructors, Inc. of Tampa, Fla., a \$56 million contract to construct the Space Station Processing Facility (SSPF).

Under the terms of the contract, Metric Constructors will build the 457,000-square-foot facility to be used as the central pre-flight checkout and processing point for Space Station *Freedom* elements.

The SSPF, which will be located in the KSC Industrial Area, just east of the Operations and Checkout Building, will be a KSC operated facility occupied by about 1,000 NASA and contractor employees. The three-story SSPF will include communications and electrical control areas, laboratories, logistics staging areas, operational control rooms, office area and a cafeteria. The SSPF

This is a real milestone for Space Station Freedom and America's future in space.

will have over 63,000 square feet of dedicated payload processing space, which includes a high bay and intermediate bay. A 5,000-square-foot airlock will be adjacent to the primary processing area. Both the airlock and processing area will be 100,000 parts-per-million-rated clean rooms.

A visitor viewing window, which will allow NASA tour guests to view Space Station *Freedom's* pre-flight operations, has also been designed into the building's processing area.

"This is the biggest new construction facility undertaken at KSC since the Apollo era," remarked SSPF Project Manager Walt Stumpley. "The design of this building makes it a remarkable facility," Stumpley continued. "The fact that all of the processing area's work stands will be air-bearing compatible and that there will be no fixed objects on the floor gives us almost infinite flexibility." Air-bearing systems allow for easy movement and positioning of large work stands and structures.

"This is a real milestone for Space Station *Freedom* and America's future in space," said KSC's Space Station Program Manager Dick Lyon.

Construction of the SSPF is set to begin on or about April 1, 1991, and the building should be ready for occupancy within three years of the SSPF ground breaking.

Lockheed speaker describes shuttle processing to Aerospace Society

by Joshua S. Mussaf
Space Technology Editor

On Wednesday, February 20, the Embry-Riddle Aerospace Society hosted a guest speaker from Lockheed Space Operations Company. Mr. Bob Granath an officer of the public relations department at Lockheed spoke to a crowd of 30 students and faculty about the role Lockheed plays in shuttle processing.

During his hour long presentation, Mr. Granath showed slides that visually described many of the operations that Lockheed performs. After the slide show, Mr. Granath held a question and answer session where many topics on the space industry were discussed.

Lockheed Space Operations Company, a division of the Lockheed Corporation, was chartered in 1982. In 1983

NASA awarded the company the Shuttle Processing Contract. Under this multi-year contract, Lockheed Space Operations Company is responsible for all the ground processing of America's Space Shuttle fleet.

The company performs the modifications, testing and checkout operations required to ready the Space Shuttle for launch. Shuttle processing responsibilities also include operation of the ocean going ships which retrieve the expended solid rocket boosters after they are jettisoned and parachuted into the sea, as well as facilities and systems operations maintenance at the Kennedy Space Center (KSC).

At KSC, Lockheed Space Operations Company has primary responsibility for operating many of the principal launch facilities including

This evening, the Aerospace Society will be hosting Ken Jang from Pratt and Whitney.

the mammoth Vehicle Assembly Building (VAB), the Orbiter Processing Facility (OPF), the Launch Control Center (LCC) and Launch Pads 39-A and B.

The shuttle processing contract team consists of Lockheed Space Operations Company, Grumman Technical Service Inc., Thiokol Corporation and Johnson Controls (Pan-Am) World Services.

When the shuttle returns to KSC and its hanger, the Orbiter Processing Facility, the Lockheed team inspects

the 30,000 tiles that cover the orbiter. After each flight, only about one dozen need to be replaced.

While in the OPF, the shuttle undergoes changes within the crew compartment, since the configuration needs for each mission differ.

Currently, there are two OPF in use and a third is being converted to an OPF from being an Orbiter Maintenance Facility.

Lockheed also maintains a presence at Vandenberg Air Force Base, the Department of Defense's West Coast launch facility. The Air Force constructed Space Launch Complex 6 at Vandenberg and in 1983 Lockheed began performing support operations in preparation for the beginning of Shuttle launch operations at Vandenberg.

After the *Challenger* accident in

1986, shuttle launch plans were changed and Space Launch Complex 6 was mothballed. Presently, it is being refurbished to handle Titan 4 Centaur, Scouts, Deltas and Atlas E's unmanned rockets.

During the question and answer session Mr. Granath spoke about our future in space. He believes that the Mission to Planet Earth, more unmanned planetary probes, a moonbase and eventually Mars exploration will be in our future. Other topics included the Shuttle C program, the advanced solid rocket motors and liquid rocket motors, and the reentry vehicle for the Space Station *Freedom*.

This evening, the Aerospace Society will be hosting Ken Jang from Pratt and Whitney. Mr. Jang will be talking about the advanced tactical fighter.



Shuttle expert...

Mr. Bob Granath of the Lockheed Space Operations Company spoke to the Aerospace Society last Wednesday.

Queen's latest album is a chart climber



They are back... Queen has finally released another album, to the delight of fans everywhere.

by Ron Roberts
Staff Photographer

Queen is back again and rushing headlong into this new year. Their newest album, *Innuendo*, has already hit the charts and is climbing fast. It's good to hear a band that hasn't changed its style but

managed to keep up with the changing music scene. Queen is known for their attention to detail in music. They have always managed to keep the music complex without being overbearing and confusing. The operatic quality of lead singer Freddie Mercury's voice and the use of choral effects and overdubbing help create a rock-opera genre of music. It would be easy to imagine almost any collection of Queen songs performed in an opera hall and *Innuendo* is no exception.

Queen has also done a number of soundtracks for movies. Among the more famous are the *Highlander* soundtrack and the ever popular, *Flash Gordon* soundtrack. Queen's music is an excellent background to both movies. Their music adds to the visual quality and flows with the action. If you like the movies, I would highly recommend both soundtracks.

In addition to Freddie Mercury, the other members, Brian May on guitars, Roger Taylor on drums, and John Deacon on bass guitar, are all in excellent form. Brian May and John Deacon also play the keyboards and provide backing vocals. Steve Howe of Yes and Anderson, Bruford, Wakeman, and Howe, helped out with the Spanish

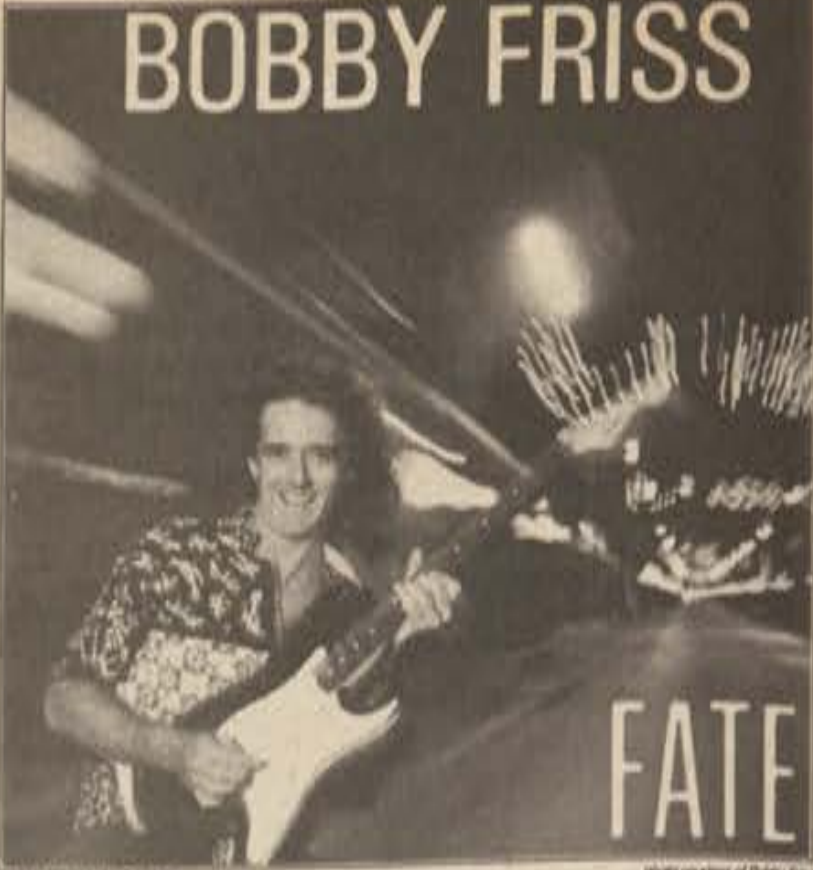
guitar on the title track. Queen is still playing in the same style as their last few albums. But the title track is very much in the style of their early hit, "Bohemian Rhapsody," which was performed like a rock n' roll opera. "Headlong," has been getting a lot of radio time locally and seems to be gaining popularity. It's comparable to "Invisible Man," from their last album, *The Miracle*.

A number of the songs such as, "I can't live without you," and "Bijou," tend to sound a lot like the *Highlander* soundtrack. They have a lot of keyboards and synthesizers without much guitar or drums.

These are still very good songs with a lot of emotion in them. A good number of the songs are solid rock n' roll. Songs such as "Headlong," "Ride the Wild Wind," and "The Hitman," have very little synthesizers and more guitar and bass. Unfortunately, the backing drums are just that, backing. There isn't much of the Queen complexity in the drum tracks, but with earlier hits like "We Will Rock You," it was never needed.

There are some very good songs on this album that probably will never get played on the radio. Any old Queen fan would love this album and I would recommend *Innuendo* to anyone who likes "Bohemian Rhapsody," or the music from *Highlander*. *Innuendo* proves that a band like Queen can keep up with the times and keep their style of music.

A good number of the songs are solid rock n' roll. Songs such as, "Headlong," "Ride the Wild Wind," and "The Hitman..."



Bobby's fate... Bobby Friss and his band is currently touring the country promoting his music and his new album, titled *Fate*.

Friss to jam in Daytona

by Todd Hughes
A.P. News Editor

After playing the club circuit for 13 years and playing about 300 dates a year, Bobby Friss has finally earned a break. The Bobby Friss Band, a local band from Tampa, has been picked up by a major band network and is touring the country.

The band has also released a new CD, called *Fate*, and is receiving airplay across the state. One of the songs from the album, called "Lonely One," recently won a listeners appreciation award on the Q96 radio station.

Fate is an invigorating album and a "fun loving everybody have a blast album." It is very addicting and makes you want to play it over and over again.

The album is not made up of the usual blank "pop" lyrics and the in-

famous "tell a story." Some of the songs make you really embrace the people they are written about.

Like in "Lonely One," Bobby sings about a guy who had a really rough life and was finally over all the problems he had. Friss sings about the one sunny day in Miami when a stranger ran a stop sign and took the guy's life. He then goes on to talk about all the

people associated with the accident and how they have to carry on. I have seen many of the local bands and The Bobby Friss Band ranks right up there with the best of them. In fact they blows many of them away.

The Bobby Friss Band will be appearing at "The Other Place" in Ormond Beach on March 4 and will appear there through March 10, 1991. If their live act is anything like their album, the show will be one of the best of the season.

Silence of the Lambs is a movie for cannibals

by David Fekke
Diversion Writer

There are not many movies that can make your heart pound like a rabbit on uppers.

Silence of the Lambs is one of those movies that can do just that.

Jonathan Demme has brought a thriller to the screen that scares the audience along with tormenting their minds. Demme has directed what could possibly be his best film yet.

Silence of the Lambs is about a junior FBI agent who has to try to find a serial killer through the twisted mind of another murderer.

Jodie Foster plays the FBI agent Clarice Starling. She is not even out of the academy yet, and she supposed to have a series of interviews with Dr. Hannibal Lecter, played by Anthony Hopkins.

Some people may remember the character of Hannibal Lecter from the

movie *Manhunter*. Dr. Hannibal Lecter is also known as "Hannibal the Cannibal." Lecter was a prominent psychiatrist who went mad himself, and developed an appetite for human flesh.

Lecter is described in the movie as the only true psychotic with the ability to see into other peoples minds. His powers could best be described as the power a true Betazoid from *Star Trek, The Next Generation* would have.

The true strength of this movie lies within the dialogue between Lecter and Starling.

Even though Lecter is behind a wall of thick glass, he still possesses the ability to torment and bring in fear into someone's heart even though he cannot touch them.

Starling, even though she is new to the FBI, is still driven by her past and inner strength to deal with Lecter and capture the serial killer.

The relationship between these two would be enough to make the movie, but this movie keeps us moving through a twisted trail of bodies left by Buffalo Bill, the serial killer Clarice is hunting.

The majority of this movie takes place trying to capture the serial killer. Things start to step up when the killer

captures the daughter of a U.S. Senator. To tell more would give away to the ending of the movie. This movie is definitely a must see.



Horror heaven... Lambs proves to be a true horror film.

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Harriers prove valuable to infantry in ground war

by Dan Moughamian
Aeronautics Writer

As Operation Desert Storm's aerial bombardment campaign continues, the AV-8B Harrier II has become an invaluable asset to the allied forces in the Persian Gulf.

The AV-8B is produced by McDonnell-Douglas and British Aerospace, and will become a more valuable asset as the ground war continues.

The Harrier is important for close air support since it can operate close to the forward edge of the battle area (FEBA) from expeditionary airfields.

The Harrier II is operated by the U.S. Marine Corps, the United Kingdom, and Spain. The reason the Harrier II is so critical to Desert Storm's success stems from the fact that it is a short takeoff/vertical landing (STO/VL) aircraft. Since the Harrier II can operate close to the front lines it has a quick response time for the infantry it supports.

The AV-8B was developed in the mid-seventies as an improved version of the AV-8A Harrier...

The AV-8B is also a very reliable aircraft with mission capable rates in the Gulf around 85 percent, and mission success rates above 80 percent. The AV-8B is also a very survivable aircraft and has had an extremely low attrition rate during the Gulf War.

The AV-8B was developed in the mid-seventies as an improved version of the AV-8A Harrier. The AV-8A was produced only by British Aerospace.

McDonnell-Douglas became involved after the U.S. Marine Corps decided to develop an improved version of the AV-8A.

Improvements on the B model include a new super-critical wing that has 15 percent more wing area than the A model.

This new wing also incorporates Leading Edge Root Extensions (LERX) for enhanced maneuverability. The AV-8B also uses advanced cockpit systems and

the Angle Rate Bombing System for pinpoint accuracy during ground attack.

Other improvements the AV-8B incorporates, are an improved Rolls-Royce Pegasus engine with more power and efficiency, and a redesigned engine intake.

Lift improvement devices have been added to improve the vertical takeoff and landing performance of the Harrier II, these include strakes on the lower fuselage and retractable forward fence to capture and reflect exhaust during takeoff and landing.

Weapons used on the Harrier II include conventional bombs, Maverick air to ground missiles, AIM-9 sidewinder missile, and two internal 25 mm cannons.

Improvements planned for the Harrier II are to include a Hughes APG-65 radar for the U.S. Marines and Spanish Harriers.

Development of a Harrier III is under way at British Aerospace and McDonnell-Douglas. New features will include a high resolution pulse-doppler radar, a new engine which will allow supersonic flight, and improved cockpit displays and systems.



Close Air Support...
The AV-8B Harrier is a valuable weapon for the front line troops in the Persian Gulf.

NASA X-29 sets records in research flights

by John McDermott
Aeronautics Editor

The X-29 forward swept wing technology demonstrator has added two new records to its history at NASA's Ames-Dryden Flight Research Facility, Edwards, Calif. The unconventional looking aircraft flew five times on January 25 to set a one day flight record, and tied an existing weekly flight frequency mark when it chalked up nine missions during the week of January 21-25.

The X-29 has flown four times in one day several times, most recently on January 22. But until January 25, no research aircraft at Ames-Dryden had ever flown five times in one day. The only other research aircraft to fly nine times in one week at the facility was the APTI (Advanced Fighter Technology

Integration) F-16 in July 1983.

The X-29 is currently investigating the high angle of attack characteristics and military utility of its unique forward swept wing/canard design in a joint NASA/USAF program. The program is producing excellent data that could be used in the design and development of future aircraft. The nine recent flights were part of a program to collect data about the aircraft's handling and control characteristics at high "angles of attack", that is when the angle of

an aircraft's body and wings relative to its actual flight path.

The X-29 now being flown is the number two aircraft. The first X-29 logged 242 flights between Dec. and Dec. 1988, most ever for a NASA research aircraft. The number two aircraft first flew in May 1989 and its



Setting Records...

The X-29 program continues with high angle of attack research flights.

record setting fifth flight on January 25 was its 78th research mission. On recent flights an angle of attack up to 67 degrees has been flown. It has demonstrated better control and maneuvering qualities in flight than computational methods and simulation model had predicted.

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The Drink, The Myth

THE LEGEND

According to legend a witch doctor called Wenz-Dae saved the Wy'-Eld tribe from certain extinction many years ago by concocting a secret potion. It seems the people of the Wy'-Eld tribe were just plain bored, boring and uninteresting... and on top of that they couldn't dance. This potion, legend states, was so inspiring that soon the better part of the dark continent was dancing to the boogie beat of the Wy'-Eld ones. As a matter of fact, partaking of this potion became part of the Wy'-Eld rite of manhood and was known as the ritual of Wy'-Eld Wenz-Dae. Unfortunately, Wenz-Dae took the recipe with him when he went and it remained locked in his tomb for 6,000 years. Then in 1944, Professor D.S. Tillery uncovered the tomb and immediately set about mixing up a fresh batch of the potion... a pinch of sweet rhino horn, a dash of cola nuts, secret distilled grains and the mystic Wy'-Eld incantation "Git Dow'n Witcho Bad Se'l." Inspired by the mixture, the aged and balding D.S. Tillery immediately spouted a full head of hair and was endowed the stamina and sex appeal of a 20 year old decathlete. He was last seen bounding off into the jungle with a bevy of native maidens in hot pursuit, and to this day in memory of Professor D.S. Tillery, Jungle Jims Still Practices this ancient ritual for their patrons who want to Git Dow'n every Wenz-Dae.

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A/CET

(continued from page 1)

In an interview with A/CET Department Chair, Peto Hellsten, went on the record as being opposed to the move to the new College of Aviation Technology. He said, "There was no dialogue (about the transfer) that he had received from the Provost prior to January 10." That is when he was told that the decision was final in a memo.

Mr. Hellsten also told the Avion that he and Provost Martin had met afterwards. According to Hellsten, he "tried to tell his side of the situation, but quite frankly, it was not very productive."

Hellsten outlined the new power structure of the College of Aviation Technology. There will be one Department Chair of Aviation Engineering Technology, with three Program Chairmen under him, Hellsten would be the one for A/CET. The new Department Chair will be held by Professor Nolan Coleman.

As the interview continued, he brought up the fact that there was an economic issue involved in the transfer. Mr.

Hellsten called that issue invalid, and said, "In my opinion, the University has not supported the program over the past four years in general, for the resources at our disposal for the development of the program."

Mr. Hellsten explained that A/CET is for the applied areas of engineering. These technicians work closely with engineers in fields of lesion, testing and manufacture of the design work. Hellsten claims that graduates of ERAU achieve a "nearly 100 percent job placement rate."

Hellsten also claimed that the amount of applications have increased 100 percent over the past year. He said, "The current trend in the University is that applications are down all over... so, we're buckin' the trend."

On a final note, Mr. Hellsten said, "The industry has a crying need for the type of students we are putting out." He also said that "the irony that the strength of the program is in the close relationship with our engineering counterparts."

Dr. Howard D. Curtis, Department Chair of Aerospace Engineering, disclosed a letter to the Avion about the transfer. In this letter, he expressed that he was "disappointed

that the A/CET faculty and students were not a part of the decision making process." He also stated that the move will not "directly affect" the program's reaccreditation by the American Board of Engineering and Technology (ABET). However, he also stated that "it could develop into a morale problem picked up by the ABET visiting team this fall."

The letter also stated that the change in Colleges would "only take place on paper." Dr. Curtis also stated that "the two programs will have to continue sharing scarce resources and crowded facilities as best they can." However, he also states that "the fact that they (A/CET and AE) reside in different colleges may make management of that task more difficult."

In conclusion, Dr. Curtis stated that there will be no change in the Aerospace Engineering program. Also, he said, "I trust that one healthy outcome of transferring... will be a focused effort to draw a clear distinction between the goals and objectives of the Universities engineering technology programs as compared with its engineering programs."

It should be stated that this letter was based on his own opinions and not those of the entire faculty.

Provost Charles Martin was interviewed by the Avion and asked, "Why this seemingly sudden decision?" He replied that the idea was discussed for two years and that it was discussed with Mr. Hellsten since then. At that time he was Dean of Engineering. Also Provost Martin claimed that he and Mr. Hellsten had spoken to Chairman Martin of Av Tech in July of 1989 about "the receptivity of having such a program."

In this year Dr. Martin became Provost, putting him in charge of the Daytona Beach Campus. As a result, he decided to go forward on this transfer of colleges for A/CET.

Provost Martin said, "It became a matter of what time to do it." The decision was made to make the move at the end of a fiscal year and the start of a new educational year, which is Fall '91.

He responded to fears that cuts in funding and the laboratory availability was going to take place. In his

see Change, page 87

Morris

(continued from page 1)

"That was a disappointment, the way they were punished. They had more hopes of openness," said Morris. "Now they're waiting, I would say, and trying to figure out what can be done."

One could "sense an underground there" in Russia, Morris stated, and he said that one "can sense an underground in China" now.

The Chinese who were most often with Fr. Morris, thereby trusting him, talked about the Massacre. They

talked with the understanding that "there'd be no reference to who they were, so they could never be picked up" by the police, he said.

The revolution that was put down in Tienamen Square was "a peace movement. It was handled on the part of those who were (forming) it without any kind of armament. So the students were not carrying any kind of armament."

"A lot of other people joined the students. We think in terms of just the students but there are untold numbers of other people. We saw pictures of Tienamen Square being full of people.

"They wanted to move away from the restraints that have been on them for so long," Morris explained. "The politicians have complete say there."

"They felt that there should be much more open dialog."

When the movement became public, Morris learned while in China, it moved among the masses with great speed, Morris said.

"It was not something that they carefully planned for years," he commented.

Of the killing of unarmed students, Morris said, "That was a horror to the people. That was not respected. So

Hinkley

(continued from page 1)

and he came in with all the overtime in the world because we were almost in a stall trying to shoot this other MIG. I immediately completely unloaded the airplane, pushing the stick forward because, a jet engine like that in a fighter will normally accelerate at it's quickest at 0 to +1 1/2 G's. I had already told my lead while I was doing this that we had a bogie 5 o'clock and he's closing in and shooting, his backseater was telling him the same thing, but unfortunately he was so intent on shooting the other MIG 17 down that he wasn't listening or wanting to hear, and so I was in the process of trying to get out of the guys gun sight, but didn't have the energy to do it and all I could see was the wing root cannon just blazing away and just when I thought I might be able to jink away, we got hit."

"I felt a thump on the rear end and I got hit with some shrapnel in my left leg and then there was an explosion, the radome, the pointy end of the plane was just blown away and I was flying this blunt instrument. I had an explosion in the cockpit and a lot of fire came out of the rudder pedals and I got a little bit in the face where my mask didn't meet my sun visor, took some burns there and I had lost all control of the airplane, hydraulics wise and so I told my backseater to bail out, which he did and then I bailed out."

"I was a little bit in shock, you normally are when

something like that happens to you. I had already been wounded in the leg and already gotten burned in the face, but you don't feel those injuries right away because you're in shock with the whole situation."

Colonel Hinkley then described the actual ejection after he told his backseater to bail out. "We had to go separately because of the danger of running into one another. Now-a-days in that same airplane we have sequenced ejection, but we didn't have the capability back then, we were tumbling out of control, but we're relatively slow in speed so the flailing injuries weren't going to be too much of a problem, depending how bad the tumbling was. We were at a reasonable altitude, at about 10,000 feet, I tried to get in a good position but it's difficult to get into a good upright position where your back is flush against the seat and your head is back and your spine is straight. That's fine when you're in a controlled ejection, but when you're tumbling and wounded and all of this fire is in your eyes, sometimes it's difficult. I tried to get into a reasonable position to eject, we're taught pretty well, and we exercised that constantly and so I got into some semblance of an upright position, but I couldn't really get it as good as I would have in a controlled situation, I pulled the handle and out I went and that's the last thing I remembered until I was falling in the parachute. The ejection sequence from the time it started up the rail until the parachute opened, I don't remember at all, and I don't know if it's from shock or be-

cause it happened so rapidly. I could remember that the danger in that seat is no longer a problem in today's aircraft. It was a ballistic seat which meant it was a one shot ballistic charge that hit you in the backside and that caused me a fractured spine. Now-a-days, the seats use rockets and they're in sequence and you have a boost, and another boost that takes you up in a much more gentler ride because you don't get that acceleration all in one belt. I hurt my back, but I didn't know that until I got to the ground. The seat worked perfectly other than the fact that it hit me pretty hard and probably wouldn't have hurt me if I were sitting in the optimum position."

"When I looked up, my parachute, there were a few tears in it. I don't know why, except they were shooting at me and I know that because when I finally got my visor off and my mask off and all that, and I did that cause I could see that I wasn't going to land in any trees or empty rice paddies. Then I could hear the bullets going by and I assumed they were 50 caliber or something like that and that may have been what tore the parachute before I knew to look up at it, I don't think so, it may have been on opening shock but the parachute was in good shape. The only thing with those parachutes back then, they weren't steerable and when I came down there was quite a bit of wind at ground level, so I could see I was going across the ground pretty well but I could not get the darn thing to steer very well. I was climbing off one of the risers trying

world.

But today some Chinese cheer the sentences of members of the revolution-the Party loyalists do. The sentencing court is in an auditorium, with large crowds harassing the defendants as they enter it.

"You've got to remember that the old way would assemble the crowds very easily. You went. Period," Morris pointed out. "You were told to go and if you didn't go, you'd be considered unloyal. And that would be a danger to your work."

The Chinese government appoints every job, he explained.

"They'd go because they were full of fear."

The victims of the court are peaceful demonstrators. One victim of the court is etched in most everyone's mind, a young man who once heroically faced his country's intolerance alone and unarmed, in front of the cameras of the West.

"You remember the famous (scene) of the young man standing in front of the tanks? Well, he's dead."

Perhaps the future will bring a more tolerant, open agenda within the Chinese government, as Fr. Morris believes.

to get it to collapse a little but I couldn't steer it away, I could see I'm headed for the gun placements but I was travelling across the ground at a very rapid rate and so just before I landed, we're talking PLF fall because military canopies get you down in a hurry and so you approach the ground at a pretty rapid rate. You need to learn how to fall on the ground so you don't break your legs and I would have done that, except I was coming across the ground awfully fast and I came across an anti-aircraft battery surrounded with sandbags, 6 to 8 feet high, I came across the top of it and it caught my feet, my feet just tipped the top of the sandbag, so I came down head over heels. When I came down I landed on the other leg, I already had shrapnel in the other leg and I had a big survival knife, one of these all cutting knives, it must have been a foot long and I had that strapped on my other leg and I landed on it and the butt of the knife went into my other leg, just really jammed in to and created a major contusion there, by the time I finally hit the ground, my legs weren't working real well at all."

Colonel Hinkley continues by saying that his landing other than the injury he had from the ballistic charge was quiet from the time he disengaged from the aircraft but says it didn't get quiet once he heard the bullets go flying by him. He was black and blue from the position in which he landed, and from the injury to the small of his back for

see POW, page 88



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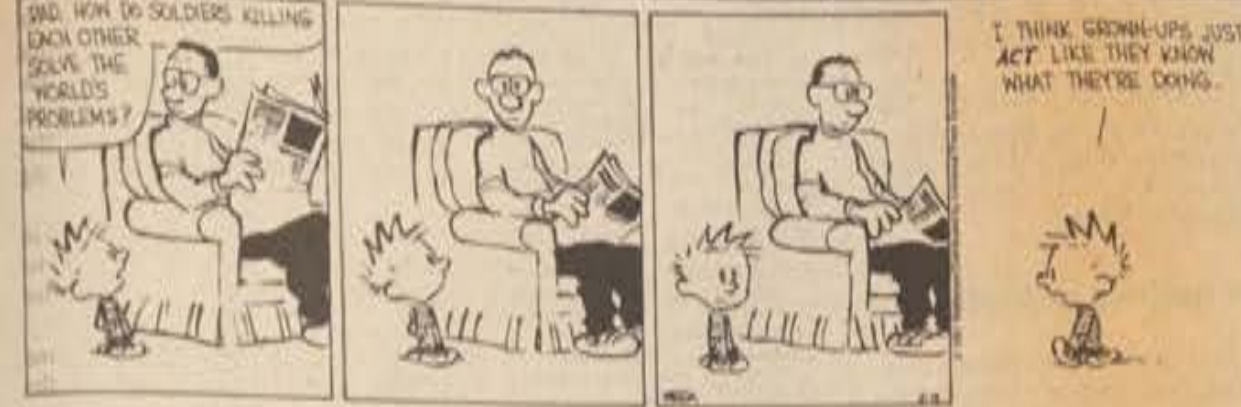


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"OK, ma'am — it's dead. In the future, however, it's always a good idea to check your shoe each time you and the kids return home."



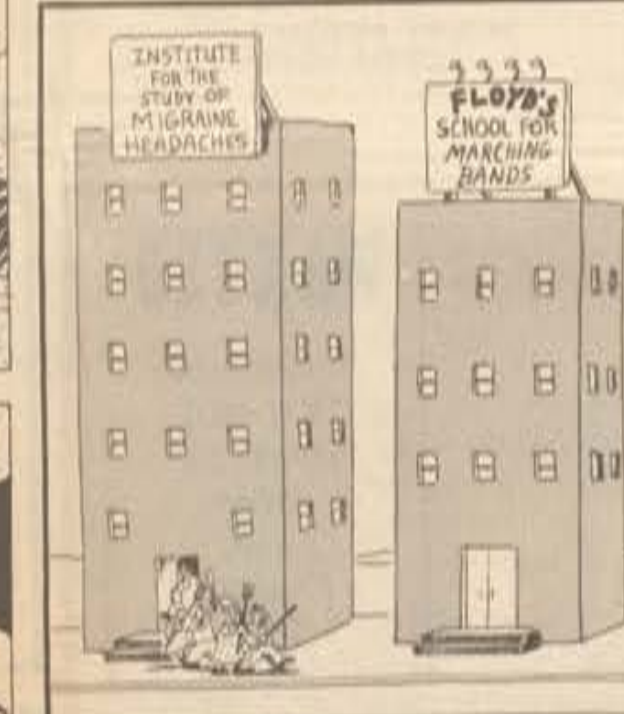
Andy looked up in horror. Right in front of Sally, a worm was emerging from his forehead — and he felt himself turning even redder.



As Thak worked frantically to start a fire, a Cro-Magnon man, walking erect, approached the table and simply gave Theena a light.



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The dam bursts



The crew of the Starship Enterprise encounters the floating head of Zsa Zsa Gabor.

Mother Goose and Grimm by Mike Peters



POW

(continued from page B4)

When asked if he found his partner, and his condition, he replied, "He (his partner) landed in a dry rice paddy and was all tangled up. To show you how much shock you're in, I had jumped out because he went out first, he came down last because I went out at a lower altitude, so I got there quicker, so I bounded up, released my parachute and saw him landing 100-150 yards away, and I ran right up to him with both legs in the condition they were in. It just goes to show you how you can be in shock and not realize you're really hurt. He was all tangled up in his parachute because he inflated his water raft, why I don't know because we were in dry rice paddies. It took me forever it seemed like to get him all untangled, and of course by this time hundreds of North Vietnamese were running towards us, and he looked up from the ground and said "Think we ought to make a run for it?"

"I almost laugh because we were 500 miles on the across the lines when we landed, we were just outside downtown Hanoi. He was in pretty much better shape that I know of. We were almost immediately separated and I never saw him again for about five years until we were released."

When asked about how military pilots feel about ejecting from an aircraft that is worth millions of dollars, and the reason why some pilots die from ejecting, Colonel Hinkley

added that, "In my Air Force career, I've known very few people who died because of the malfunctions in ejection seats, and most of the people I know who have died, died because they waited too long to use it, and a lot of this is, I've got to save the aircraft syndrome. "I'm flying a million dollar airplane", some of it's ego. "How did I let this thing get out of control? I've got to fix it", and he who hesitates is lost when you're doing warp eight."

"Most of the guys I know who died, died because their tactics caused them to run into things or they were too proud, or waited too long because they thought they could fix the problem. I can count on less than 3 or 4 fingers the fatalities that I can remember in a Martin-Baker seat that were systemic mostly, not pilot error....they put the system in a position where it couldn't possibly say it's the systems fault, it's pilot error....I think most of them feel that way, if you talk to them sitting around the office, the briefing room, and the bar or where ever, they would almost to a man say, "Hey, I'm going to jettison this airplane, I could always get another airplane,"--and the leadership in the military tells them the same thing, "Hey guys, don't worry about the airplane, by the time we've got a fighter pilot that's been flying with us for 5 or 10 years, he's worth more than the airplane anyway, so save yourselves, do not worry about being punished for losing the aircraft."

But there was a fear especially years back in the Air Force. There's some folks who thought, "This could hurt my career because I did a dumb

thing." Well that's not the Air Force we have, it's not a one mistake Air Force and every General officer will tell you the same thing. Everybody makes a mistake sometime in the air, sometimes it costs lives, sometimes it costs hardware, but there by the grace of God go I. It's going to happen to everyone once and at least once. You may be lucky enough to get out of it, but the next guy may not, but everyone makes mistakes, so do we crucify him because he lost his

airplane, and if we make him feel like he's going to get crucified for losing his airplane, he's probably going to go in with the airplane because he's going to try and fix the problem right up until the time he puts a hole in the ground."

"So the pressure is not in it for that. The pressure is that internal pride. I screwed this one up and I'm going to get myself out and I'm going to bring this airplane home."

Ground training computer testing available

ERAU is now giving ground training final exams for the private, commercial, and instrument flight courses by computer. Students completing the final exam by computer will be graduated under ERAU written self-examining authority and will not be required to take an FAA Written exam. Anyone already having passed an FAA Written will not be able to substitute it for the computer exam.

The computer testing lab is in "H" building and is outfitted to test seventeen students at a time. The tests will be given Monday through Thursday 0830 to 1630 (completed by 1630). There will be no testing on Fridays. Students have the option of signing up in person with the Flight Records Office (H-119), or by calling ext. 6828. The appropriate test must be taken within 7 testing days of the last ground lab class to prevent flight course delays.

Space research program announced

The Florida Space Grant Consortium (FSGC) has announced an Undergraduate Space Research Participation (USRP) program for Summer '91. The USRP program is designed to provide opportunities for students to become actively involved in ongoing research under the supervision of eminent faculty and researchers and to enhance students' interest in graduate study and careers in a wide variety of aerospace-related areas. To apply for this program, a faculty researcher may propose to mentor an undergraduate student during a 10 week Summer '91 research project. A \$2,000 student stipend plus additional funds for research of women, minority and disabled students. Contact the School of Graduate Studies and Research for additional information.

The Weekly Crossword Puzzle

ACROSS

- 1 Entrance
- 6 Citizen of Rome
- 11 Herb of pea family
- 12 Expunges
- 14 Printer's measure
- 15 Expert
- 17 Saint abbr.
- 18 Perform
- 20 Take unlawfully
- 21 Goddess of mischief
- 22 Parasol
- 24 Household pet
- 25 Distance measure
- 26 Detective color
- 28 Banished from one's country
- 30 Going
- 31 Limb
- 32 Sewing implement
- 35 Guides
- 38 Monster
- 39 Sore
- 41 Break suddenly
- 42 Green island
- 43 Strip of leather
- 45 Crowl
- 46 Spanish for "yes"
- 47 Confined
- 48 Compass point
- 50 Book of Old Testament
- 52 Joined
- 54 Subject of discourse
- 55 Small stove

DOWN

- 1 Writing implement
- 2 Note of scale
- 3 Abstract being
- 4 Diving birds
- 5 Sew
- 6 Tell
- 7 City in Russia
- 8 Heave
- 9 Fiqually
- 10 Cuddle up
- 11 Tote
- 13 Spotted horse
- 16 Meadow
- 19 Seesaw
- 21 Bodily infirmity
- 22 Tanned skin
- 25 Spite with mud
- 27 Hindu symbol
- 29 Indian memorial post
- 32 Do
- 33 Self-centered person
- 34 As
- 35 Sculptured likeness
- 36 Lits
- 37 Haste
- 40 Sea eagle
- 43 Squid
- 44 Shut up
- 47 That woman
- 48 Noise
- 51 Symbol for thorium
- 53 Symbol for tantalum

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Miscellaneous

Anyone going to Tampa March 1-3rd? If so I need a ride. Will pay 1/2 gas. Please call me...

WANTED-2 Sting tickets for Tampa or Miami. Call Mike, 257-1300.

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I am looking for one more AFROTC cadet (preferably Aero. Science) to locate and rent a 3-bedroom apartment, possibly Wood Forest or the Breakers...

Roommate needed for summer B Term only. To share a 3 bedroom apartment with 2 others. Call Gerry at 239-6567 or drop a note in Box 1220.

Help! Roommate needed \$158/month and 1/3 elec., cable and phone, no deposit necessary, have own room close to school and shopping. Pool, spacious, furnished call 257-5694.

Roommate wanted at Waterclub Apts. on river, own bedroom, 1/3 electric Rent \$185 per month. Cable and water included, pool and tennis courts. Easy drive to school. 238-1978. Ask for Walt or Pete.

Room Available: 3 miles from campus (in a home) Rent \$155 per month, 1/4 utilities, \$80 Deposit. Call 788-6610 For any information, or leave a note in Box 5866.

Personals

POOL PAL. Are you happy now that I put a personal in for you. Stop messing up or I'll have to get violent! OTHER POOL PAL.

Nobody makes a greater mistake than he who does nothing because he could only do a little. -Edmund Burke

KUJAMA Get with the program. MAD MAX

MR. THREE YEARS Still can't put your balls in the pocket? Try a softer shoe and maybe you won't get shot. The bar maid is awful cute! POOL PAL.

What's with the New cartoon? Couldn't afford a real artist, huh?

SEEKING YOU I need to check my Box more often. I didn't realize the quality of mail being received. Leave another note indicating phone or meeting place.

BMOC I'm not a threat. I never was. HandSine P.S. Valium its a word-use it

LISBOA - You are so beautiful. I want to tell the Whole world! DRAGON

To the guy who stole my "purely sexual relationship" ad and used it in the U.S. Journal: If you get any reply I expect a piece of the pie. Box 6073

Rachel: Wow? What's your number? You've got me excited.

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.

SCOTT Gimmee a break. Just tell me this - Who's handwriting and lips were those? THE JIW

Hi Reffi, Elenor misses you.

HEY NERD!!-Peace Dude! Try not to go through life using those blue eyes to get you everywhere. (ha ha!) Can't wait for you to fly Kim and I anywhere we want to go.

Soon you will be with "The BEST" and I'm sure you will be so happy. Make sure you come back here miss Pinky Premier! Don't forget we love you!

AC, Why do you read these things every week? RH

MR. ALAN TYLER #12 Here I am again writing you. Did you get my letter? Hope so!!! Still waiting for you to write back. I saw you on campus today and you still look great. SIEKING YOU

If you are a serious model builder, call Roland at 239-9843. I will buy the model, but I need you to build it.

POOKUMS Week 2. We still didn't manage to get to the "Seum. At least this time its not because of the Forest. I know everyone in Systems wants to wish you a Happy Birthday. Try not to get too trashed. You know the expression, a moment on the lips, a lifetime on the brain (or something like that). C. Ed.

If you can't change your mind are you sure you still have one?

TRIXIE Babe, I love your little sister, get me another date. But let's keep it our "little" secret. I'm glad you got your life straightened out as well as ours. You know when I am when you need me. THE ATOMIC PLAYBOY

HERMAN Thank for the weekend. MARTHA

TO ANYBODY Day after day. Day after day. We stuck no breath nor motion as idle as a painted ship upon a painted ocean. THE ANCIENT MARDNER Respond if you can figure it out!

SCHWANZBERG How did you like that foiled Scud attack?

BILL You need some more "a" in your notebook. You also need to work on your handwriting. I'm going to buy enough Sung to last me the rest of the time were in school so you will be able to tell when I'm around. GUESS WHO

TO THE ORLANDO BOYS How is that fence treating ya? Can we please get a little closer!

TO: The Author of NEWENGLANDER-Your identity is no secret! Please don't let your advances become an embarrassment to both of us!!!

SUZANNE-CONGRATULATIONS on your ROTC SCHOLARSHIP! I hope all your dreams come true someday and you fly the friendly skies. Take care of yourself and try not to date too many men in uniform. HA!

II+S AND MAD MAX Can I get to know Real too? KUJAMA

ALEX Do the envelope thing by GT DISTRIBUTORS. I've already made \$74 on day #2. MARTY

Take care Primetime, Peach Fuzz, Sweet Meat, Kevin, Ken, Brian, Sean, Jud, Joe, Dee, Jay, Tina & Colson. The pleasure of knowing you all was mine. Good luck in your studies & all future endeavors. CPL. JIM VAN CATT U.S.M.C.

G-MAN Just keep smiling! A&D

Once upon a time Once when you were mine... LOVE ALWAYS JRM!

Dear Raah: Happy 21st! I Guess we'd better start buying stock in Anheuser-Busch now. LOVE M.P.

TO IP-491 R.I.G. LANDER DESIGN TEAM, Good Presentation, Now get the hell back to work! LOVE, LANDER COMMANDER

GREG What happened saturday night? Inquiring minds want to know. A&D

To all Nobody Beats the Wiz employees and former employees: We need you! The Crazy Eddie retail electronics support group now wants Wiz employees, due to lack of response from within C.E. We are organized to deal with the wave of bankruptcies in our industry. Join now, Contact Box 6065 or Box G220.

Bobheim McStutz, Blitzkrieg is not the answer! Anschluss von Frankburg

YBHC I can't believe we doing it. I wouldn't want anybody else. TOP MAN

The truth shall set you free, but first it shall piss you off. -A.Q.

I'm going to graduate. I don't have a job. I will be in debt for the next 10 years. I am lonely. I have realized the futility of the American Dream. It is a cold world, and there is no reason to stick around. Have a nice day.

AVAILABLE, One missing Ass. Poor Roland, XX XXXXXX XXXX XXX XXXX XXXX XXX XXXX! Sorry Dave, but I beat you to it!!! I will get it back!!! Pms.

TO: The Author of NEWENGLANDER-Your identity is no secret! Please don't let your advances become an embarrassment to both of us!!!

SUZANNE-CONGRATULATIONS on your ROTC SCHOLARSHIP! I hope all your dreams come true someday and you fly the friendly skies. Take care of yourself and try not to date too many men in uniform. HA!

II+S AND MAD MAX Can I get to know Real too? KUJAMA

ALEX Do the envelope thing by GT DISTRIBUTORS. I've already made \$74 on day #2. MARTY

Take care Primetime, Peach Fuzz, Sweet Meat, Kevin, Ken, Brian, Sean, Jud, Joe, Dee, Jay, Tina & Colson. The pleasure of knowing you all was mine. Good luck in your studies & all future endeavors. CPL. JIM VAN CATT U.S.M.C.

G-MAN Just keep smiling! A&D

Once upon a time Once when you were mine... LOVE ALWAYS JRM!

Dear Raah: Happy 21st! I Guess we'd better start buying stock in Anheuser-Busch now. LOVE M.P.

TO IP-491 R.I.G. LANDER DESIGN TEAM, Good Presentation, Now get the hell back to work! LOVE, LANDER COMMANDER

GREG What happened saturday night? Inquiring minds want to know. A&D

To all Nobody Beats the Wiz employees and former employees: We need you! The Crazy Eddie retail electronics support group now wants Wiz employees, due to lack of response from within C.E. We are organized to deal with the wave of bankruptcies in our industry. Join now, Contact Box 6065 or Box G220.

Bobheim McStutz, Blitzkrieg is not the answer! Anschluss von Frankburg

YBHC I can't believe we doing it. I wouldn't want anybody else. TOP MAN

The truth shall set you free, but first it shall piss you off. -A.Q.

BROADCAST CLUB Great job guys, creativity does exist on this campus. GUMBI

IBM 55SX vs Protek '386SX comparison table. CPU, RAM, Speed, Monitor, Floppy, Mouse, Joystick, Printer, Windows. Price comparison.

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Change (continued from page B4) response he said that "that is not the idea... we have another Engineering Technology program called Avionics Engineering Technology. So, let's combine these two in a new college and give them both prominence."

be a part of the new engineering building. He said that was not true. The engineering building will be built in phases with Engineers in first and then the Technology programs in after. Dr. Martin addressed one of the most common concerns that the "red tape" between AE and ACET would be a problem. He said, "Not in the least, we discussed this and we worked this out."

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