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SPACE TECHNOLOGY

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Shuttle astronaut training leads to one incredible ride

Astronauts' journey into space begins with many months at JSC

By Brian Gamage

Space Technology Editor

Riding in the space shuttle as it lifts off the launch pad and then viewing the Earth from a heavenly perch is every astronaut's dream. But they soon discover that the road to that mother of all window seats is a long and arduous one.

The United States' space shuttle is a unique vehicle with a unique mission. The crews who fly and operate this vehicle are also unique in the world of aerospace flight training. These men and women enter the program from many diverse backgrounds and with widely varying degrees of technical and professional experience.

The shuttle training program must be thorough and yet flexible enough to accommodate the many different technical backgrounds. This process involves many trainers, simulators, briefings and lectures all across the United States.

Nearly all of the training is done at the NASA Johnson Space Center (JSC) in Houston, Texas under the training division of the center's Mission Operations Directorate.

Early in their training program, the astronauts embark on a tour of the many NASA facilities and fac-

ories where shuttle parts are made. This gives them the opportunity to get a feel for how everything is brought together to support their mission.

The flight capable astronauts then enter a flight training program using 25 T-38A jet aircraft, which allow them to practice space shuttle approaches.

The astronauts also train in survival techniques, including water survival, para-sail training and SCUBA certification in the swimming pools of JSC.

In addition to the T-38 training all astronauts are required to go through a KC-135 familiarization flight. Among the astronauts it is known as the "Vomit Comet," because it flies a series of fifteen parabolas, giving them exposure to weightlessness and also, an upset stomach.

The astronauts spend at least two hours a day in classes involving the various shuttle systems. Instructors will introduce a malfunction into the system model and the student astronaut will exercise the appropriate procedure in response.

To train the prospective shuttle pilots for the requirements during landing, NASA/Ames Research Center uses a motion simulator.



Photo by Steve Gamage

The crew of STS-55 are given a crash course in emergency egress from the launch tower. In the event of an emergency during the launch countdown the astronauts are instructed to escape via seven egress carriages which travel down wires to a protective bunker. In the background is a carriage and a series of crash nets designed to stop the carriages. German payload specialist Ulrich Walter (arms folded), mission specialist Bernard Harris Jr (middle) and mission specialist Charles Precourt (right) listen while a launch instructor explains the use of an armored personnel carrier that the astronauts would enter to be driven away from the launch complex.

STS-55 crew spends three days practicing at launch pad

By Joshua Musraf

Clubs Editor

The STS-55 crew spent three days last week at the Kennedy Space Center (KSC) for final training in emergency procedures on the launch pad and participating in the Terminal Countdown Demonstration Test (TCDT) in preparation for their flight next month.

The TCDT simulates the final hours of a launch countdown and serves as a practice exercise in which both the launch team and flight crew rehearse launch day time lines and procedures.

The test culminates in a simulated ignition and automated shutdown of the orbiter's main engines. This test supports an important function for the KSC launch team.

During what is called the malfunction run, the test simulates real-time failures of vehicle and ground systems. The test also provides support crew astronauts with crew module training.

see TCDT, page B8

see Training, page B8

Columbia launch delayed two weeks

Missing engine documents to blame

By Arie Moller

Staff Reporter

On Sunday February 7, *Columbia* was rolled out to Launch Complex 39-A where a change of the high pressure oxidizer turbopumps will take place. The turbopumps will be checked due to a paper work mixup. Basically, NASA is not sure which turbopumps are currently on the Shuttle *Columbia*.

The high pressure oxidizer turbopumps control the flow of oxidizer in the three main engines. The problem with the turbopump centers around the tip seals that control the flow around the tips of the turbine.

Columbia currently contains the old version of the tip seals that require inspection before every flight. The revised version that will be placed in *Columbia* do not have this requirement. The pumps require about 20 days of work to install.

The pumps for the *Discovery* and *Endeavour* will be replaced before their next missions as well.

The space shuttle main engines are the product of Rockwell International Corporation. The engines have flown a total of 33 flights. 24 different engines have flown aboard the shuttles. At a hundred percent rating, each main engine produces 375,000 pounds of

Main Engine Facts

Problem - KSC inspectors could not determine if new turbopump seal retainers were installed on *Columbia*.

Solution - For safety reasons, NASA officials decided to replace all three pumps on *Columbia*, *Discovery* and *Endeavour*.

thrust. In total, each engine consumes 1.35 million pounds of liquid oxygen and 229,000 pounds of fuel.

The main engines are started at T-6.6 seconds. The engines are sequence-started at 120 millisecond intervals. At T-0, all three engines are operating at 100 percent capacity. After 26.40 seconds of flight, the main engines are cut back to 70 percent. Solid booster separation occurs at 26.40 seconds also. At 125.9 seconds, the main engines throttle up to 104 percent. Main engine burn at this level continues until T+451.2 seconds. The engines are then tapered down to 74 percent, which is reached at 502 seconds. They are then kicked down to 67 percent thrust for orbit insertion.

NASA releases photos of Challenger crew cabin

By Brian Gamage

Space Technology Editor

NASA released photos of the Space Shuttle *Challenger's* smashed crew cabin, after they were made public to a New York man who obtained them under the federal Freedom of Information Act.

The agency has been reluctant to release any pictures or information citing that the photos might offend or violate the privacy of the crew's families.

In a telephone interview NASA spokesperson George Diller said that the photos had been screened before release, to preserve the privacy of the crew's families.

Photos taken by ground-based telescopes on Jan. 28, 1986 show that the crew cabin survived the initial explosion and the general breakup of the ship's fuselage.

The space agency said Sunday the 48 photos showing parts of the wrecked crew cabin became public documents after they were released to New York artist Ben Sarno on Feb. 3.

Sarno released the photos to The New York Times, which published one of them Sunday.

The pictures were taken after the

Photos...show that the crew cabin survived the initial explosion...

crew cabin was recovered from the Atlantic Ocean in 1986.

Engineers who have studied the explosion believe that the crew cabin remained intact as it fell to Earth and that some astronauts were conscious until it hit the ocean at a very high speed.

The crew cabins of the shuttles are three-level spaces 17.5 feet high and a little more than 16 feet wide. The cabins have ten windows and contain all of the space used for astronauts living and working in orbit.

All seven astronauts aboard the *Challenger*, including New Hampshire schoolteacher Christa McAuliffe, were killed when the shuttle exploded shortly after take-off on Jan. 28, 1986. It crashed into the sea off Cape Canaveral, Fla. There remains were recovered from the wreckage and returned to their families for burial.



AP Photo

A forklift installs one of the three main engines in the rear of a space shuttle orbiter. KSC employees will replace turbopump seals in all three of *Columbia's* main engines at the launch pad within the next two weeks. A document trace could not determine if the seals were new, so engineers ordered new seals installed for safety reasons.

Russian Mars rover tested in U.S.

By Joshua Musraf

Clubs Editor

In an effort to develop closer ties with leading space organizations of the former Soviet Union, McDonnell Douglas Aerospace is hosting a team of Russian engineers and scientists.

The Russian team, which is working on robotic planetary rover vehicles, brought a prototype rover to the U.S. for testing in Huntington Beach, Calif.

"Through these tests we hope to identify how Western avionics technology can be merged with Russian mobility systems to improve rover performance," said John Garvey, McDonnell Douglas project manager.

"We believe the Russian's operational experience, as well as their vehicle design and technology, could be applied to future exploration missions."

Furthermore while the upcoming efforts will focus on rovers, McDonnell Douglas Aerospace intends to investigate other possible areas of future collaboration.



Photo courtesy of McDonnell Douglas

A Russian-built robotic planetary rover goes through its paces during testing. McDonnell Douglas engineers are trying to merge western avionics with Russian systems to improve the rover's performance.

see Rover, page B8

The edges of science...

Wormholes are shortcuts through space-time

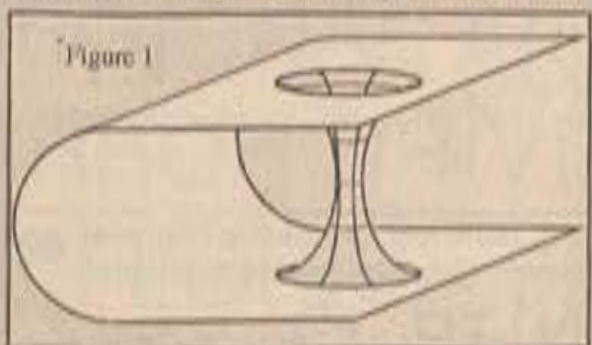
By Arie Moller

Staff Reporter

Last week in *The edges of science...* gravity was explored. In brief, gravity is just a curvature in space-time. Space-time is the four dimensional "fabric" that describes our referencing to the universe.

The General Theory of Relativity describes these concepts. But what else does Einstein's General Relativity allow? One of the most dramatic and elusive results of his theory is the wormhole.

A wormhole is best described as a short cut through space-time (see Figure 1). It connects two regions of



Graphic by David Taylor

A wormhole can be pictured as a shortcut through two regions of space and time.

space-time by extreme warping of the localized space-time at the entrance and exit points of the wormhole.

A good way to understand wormholes is to visualize space-time as the surface of an apple. If you were a worm on the surface of this apple and needed to get from the top to the bottom of the apple, you would have two choices for your route. Choice one, the long way, which is around the surface of the apple, or choice two, through the center of the apple. This is where the word wormhole originated.

How would a wormhole manifest itself and what would it look like?

There are two "flavors" of wormholes. The first is the microscopic type caused by quantum fluctuations, which are a consequence of the Heisenberg Uncertainty Principle. Heisenberg's Uncertainty Principle states that there is a minimum uncertainty between energy and time. This means that we can never measure energy or time to ultimate precision.

In essence, microscopic wormholes are "foam" on the sea of space-time. Microscopic wormholes are on the scale of 20 orders of magnitude smaller than an atomic nucleus.

The second "flavor" called macroscopic, would be a large scale wormhole having similar characteristics to those of a blackhole. It would possess an extremely large gravitational pull.

see Wormholes, page B8

Lockheed submits C-141 modification proposal to DOD

By Denis Biscobing

Staff Reporter

Lockheed has submitted an unsolicited, fixed price proposal to the Department of Defense (DOD) in reference to extending the service life of the C-141 StarLifter.

The Service Life Extension Program (SLEP) would modify 178 of the transports and include wing replacement. The SLEP is expected to extend the service life of the C-141 by 40,000 hours.

In the late '70s, the C-141's underwent a stretch modification that increased the volume capacity and included the addition of in-flight refueling capability.

The proposed modification would extend service life to 85,000 hours and supplement a \$1.6 billion modernization program that the Air Force has already planned and initiated.

At the present time, more than 265 StarLifters are in use. They provide

thirty two percent of the total airlift capacity and provide sixty percent of the peacetime strategic airlift missions.

Lockheed settled on modifying 178 aircraft because that is the number required to meet the current DOD strategic airlift capability goal of 57 ton miles per day. That goal takes into account the planned acquisition of 120 C-17 Globemaster IIIs.

The primary modification included in the SLEP is the replacement of the C-141's inner and outer wing sections. Fifty eight aircraft would receive a new center wing box.

The fuselage cab top, parts of several main frames and the engine pylon attachment fittings would be replaced.

The vertical stabilizer would be modified to reduce stress loads in low altitude missions.

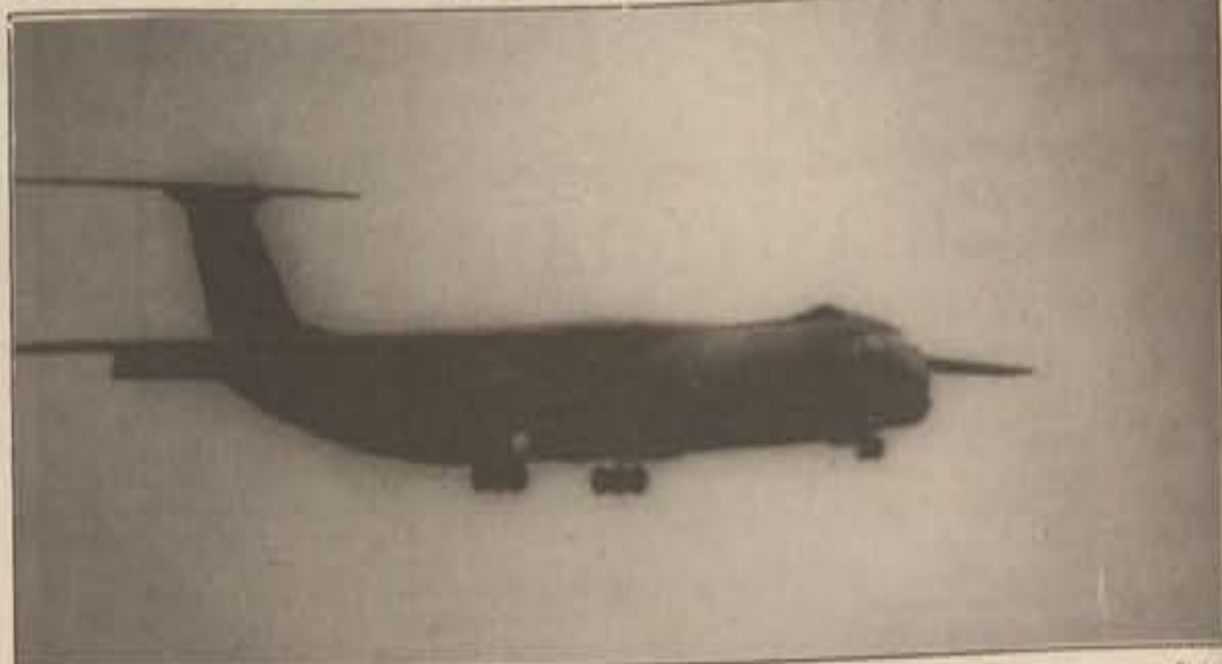
Bleed air systems, wiring, main landing gear actuators, spoilers and control cables would all be

upgraded. This would include a new power-by-wire, fly-by-wire electrically activated spoiler system.

"The whole program is designed to do two things. First of all we want to get the primary structure's life extended to 85,000 hours; and we want to upgrade those items that will reduce, in a cost effective way, maintenance costs. The C-141 SLEP will accomplish these goals," said Bob Wall, the C-141 program director for LASC.

The firm fixed price proposal is for \$4.45 billion or \$25 million per aircraft, in 1992 dollars, for the 178 aircraft.

If the go-ahead is received in January of 1994, fabrication would begin in April of 1995. The first StarLifter would enter the program in October of 1995, and it would be re-delivered to the Air Force in December of 1996. The final SLEP C-141 would be re-delivered by May, 2002.



The Lockheed C-141 StarLifter is currently being used to aid Somalia. The Department of Defense has been offered a contract to update 178 of the transports.

Air Force officially designates C-17 transport 'Globemaster III'

By Denis Biscobing

Staff Reporter

The U.S. Air Force/McDonnell Douglas C-17 transport aircraft has been officially designated the "Globemaster III."

The first two "Globemaster" transports were also built by McDonnell Douglas for the Air Force. The first Globemaster was flown in 1945 and the C-124 Globemaster II was first flown in 1949.

The Globemaster III combines the advantages of strategic airlifters such as the C-5 Galaxy; speed, range, flexibility and payload with the advantages of a theater airlifter such as the C-130 Hercules; maneuverability, short-field capability, survivability and airdrop capability. The C-17 will replace the military's present main transport aircraft, the C-141 StarLifter. The new aircraft can deliver almost twice as much cargo for about the same operating cost as the StarLifters. The Globemaster III will supplement the

C-5 by bringing large cargo into small or congested airfields. The C-17 can be operated from shorter airstrips and eight C-17s can be parked and unloaded in the space taken by only three C-5s.

According to the Air Force, the initial movement of U.S. forces to Saudi Arabia in Operation Desert Shield could have been completed ten days sooner had the C-17 been available. In the present Somali airlift, the Globemaster III could deliver cargo forty percent faster than the current fleet.

The C-17 can carry over 80 tons of cargo and, with air refueling, has a near-worldwide range.

The fourth production aircraft, which was delivered to Edwards Air Force Base, Calif., recently completed a 2,786 nautical mile, non-stop, non-refueled flight with a 160,838 lb. payload. Upon landing, the Globemaster III still had 21,000 pounds of fuel left — enough for another 467 nautical miles.

The fifth production aircraft, P-5, just completed its initial flight in

Long Beach, California. P-5 is the PCA (Production Configuration Audit) aircraft, the aircraft whose configuration is identical to the C-17s that will be produced in the future for entrance into operational service.

The next completed aircraft, P-6, will be delivered directly to the 437th Airlift Wing at Charleston Air Force Base.

The aircraft is approximately 85 percent complete and is the last aircraft in the initial production contract. P-1 through P-4 will continue testing, while P-5 and P-6 will be delivered to the 437th. The Air Force plans to buy an additional 118 C-17s for a total of 120 aircraft.

The Air Force recently awarded McDonnell Douglas with a \$62.8 million contract for eight C-17s. A contract for ten other Globemaster IIIs is currently being negotiated.

As of February 1, the five operational C-17s had flown 281 total flights and accumulated 985 flight-testing hours.

Experimental Aircraft Association plans to expand auto-fuel research

By Denis Biscobing

Staff Reporter

The Experimental Aircraft Association (EAA) is planning on extending its auto fuels research by beginning a program that evaluates the characteristics of new mixtures of auto fuels used in aircraft.

The EAA Aviation Foundation began a program for auto fuel testing in the mid '70s, and the latest program will be an extension of that program.

According to EAA Aviation Foundation President Tom Poberezny, "the use of auto fuel has proved to be safe and more cost-effective for many types of airplanes. Its lower cost enables more pilots to fly more hours. This, in turn, enhances aviation safety by improving a pilot's proficiency."

The program is planned to study new mixtures of gasoline that have been mandated by the Environmental Protection Agency (EPA). The new fuels require the

use of oxygenates that reduce harmful emissions. At this time, Methyl Tertiary Butyl Ether (MTBE) and ethanol are the most widely used oxygenates.

The new program will use the same Cessna 150 that was used in the earlier studies. The aircraft will be flown with aviation fuel as well as auto-fuel blends that contain various concentrations of oxygenating agents.

Specialized instrumentation will allow information to be gathered. This information will later be analyzed for efficiency using EPA standards.

The research will also include fuel related accident/incident reports, and autogas users' surveys, to gather information on use characteristics and experiences.

The use of MTBE is expected to enhance octane levels, reduce volatility and the potential for vapor lock, as well as improve powerplant reliability and durability.

Although auto-fuel had been used in some aircraft prior to World

War II, the use of auto fuel increased in the mid '70s when airplane manufacturers stopped producing engines that could run on 80 octane fuel.

At that time, oil refiners decreased 80 octane fuel production and concentrated on refining 100 octane low-lead. Pilots could either have their engines converted to better use the 100LL, or use 100LL in their engines and accept the disadvantages. Using 100LL increased spark plug fouling, since the engines did not run hot enough to completely burn the fuel.

The EAA received an autogas Supplemental Type Certificate (STC) for the Cessna 150 in the early '80s and later expanded the STC to include between 60 and 70 percent of the General Aviation fleet.

More than 40,000 STCs have been issued through the EAA and Petersen Aviation of Nebraska, which is the only other organization pursuing the use of auto-fuel in airplanes.

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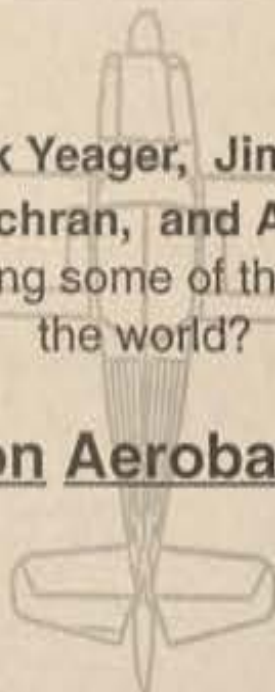
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Deep Jimi And The Zep Creams release *Funky Dinosaur*



An alternative rock band from Iceland, Deep Jimi And The Zep Creams has just released their first album with Atco Records, entitled *Funky Dinosaur*. Produced by the same man who did King Missile's album, this debut has all the characteristics of a great band, with a blues/heavy/psychedelic-influenced style. The band consists of (from left to right) Julius Gudmundsson, Bjorn Arnason, Thor, and Siggi Eybrg.

Dionne Warwick has her friends sing on her album *Friends Can Be Lovers*

By Mike McGrath
Staff Reporter

I know what you are thinking. What is a movie critic doing reviewing music? Even more so, why Dionne Warwick? Well, it just so happens that when I was a kid, every Saturday night at 7 o'clock I watched *Solid Gold*. It also happens that Dionne Warwick was the host.

Although this is the first time I had heard of her and of her musical talent, Dionne has been making music long before this television show started.

Her latest release is *Friends Can Be Lovers*, a truly contemporary music album. I am sure everyone is familiar with the song "That's What Friends Are For." This style is apparent throughout the album. They are powerful and to the point, yet they are as original as her voice.

In addition to Dionne's voice, many well known performers add their talents in various ways. Burt Bacharach and Hal David teamed up and wrote "Sunny Weather Lover."

For many years, Burt has written many adult contemporary songs that always make the top ten list. Coming out of retirement, Burt wrote this one especially for Dionne. It's a combination that makes this song one of the best on the disk.

Luther Vandross and Lisa Stansfield lend their talents to background vocals in two of the songs. Their vocals blend perfectly with Dionne's.

Perhaps the most outstanding contributor to the album is Whitney Houston. In a duet, Whitney's voice is stronger and more powerful than



Dionne Warwick continues to delight soft rock fans with hits from her new release *Friends Can Be Lovers*.

Dionne's. Dionne does not try to step on any toes, though. She just lets Whitney do what she does best. However, Dionne does what she does best, she blends in.

There may be a lot of people helping in this project, but Dionne is the main voice on the album. One could say that her voice is unique, and able to be distinguished from any other voice singing with her, so there's no trouble picking her out from the background voices.

I have heard a lot of her songs over the years, but she hasn't lost any voice. These were typically

good Warwick songs. Her new album follows this trend quite nicely. If I had not gotten the album for free, I might have even bought it myself.

What, you say? Does the movie critic actually like slow music? Well, maybe you're right. It's probably a result of my upbringing, or some other Freudian thing.

Things could be a lot worse, though. I could have watched *Dance Fever* instead of *Solid Gold*, whereas I would be doing a *Disco's Greatest Hits* review right now.

Extremist sports gain popularity

College Press Service

The risk factor is usually high, and the excitement level near feverish. Poor judgment can mean injury, sometimes even death in hard-core downhill skiing, snowboarding, in-line skating, road luge, sky diving and bungee jumping.

Yet, a growing number of people in the twenty-something age group are seeking recreational outlets in such extremist sports.

The extremists generally speak in a language all but unintelligible to the average person. Surfers "get tubed," sky divers make "HALO drops," extreme skiers watch for "decaying comices," rock-climbers "place pro," and yet all of them share a love for gut-wrenching adventure.

"It is only through the direct confrontation ... only by staring into the naked face of death that we discover the true nature of self," says 22-year-old Stan Lindemuth, a rock-climbing junior at Clarion University of Pennsylvania.

When "the strength of your fingertips is all that separates you from a 120-foot fall to your death, you start to get rather deliberate," Lindemuth says.

This viewpoint reflects the premise of the rock-climber. Lindemuth is among those few who dare Nature to challenge them to the utmost. Once considered a sport reserved for those with a death wish, climbing has moved into the mainstream with exposure through movies like "K-2."

Extremist sports, says Lindemuth, are "a healthy and socially responsible way of getting high."

A growing number of universities throughout the United States have started adventure-based clubs and organizations. One such group is Penn State University's Outing Club, which sponsors trips for spelunking, sky diving, and rock climbing at a local quarry.

A characteristic of the twenty-something generation is an increased concern with environmental issues. The extremist enthusiasts are no exception to this.

"The cool thing about (the quarry at) Bellefonte is that an old environmental scar has been transformed into something useful," said Andy Arndt, a 24-year-old junior and president of Penn State's Recreation and Parks Professional Society.

Members of the Outing Club have made it part of their mission to maintain the climbing site.

Spelunking, or cave exploration, is another such adventure sport that has gained enthusiasts in increasing numbers from the twenty-something crowd over the past several years.

Thomas Craver, a 26-year-old sophomore at Florida State University, is a cave enthusiast. According to him, spelunking is a "real study in panic management."

He goes on to warn that cave exploration is not a sport for the inexperienced or faint-of-heart, nor is it anything to try alone.

"Losing your way and starving to death in the pitch-black depths of the earth is a very real danger unless a great deal of caution and forethought is exercised," he said.

Extremist sports are not realm where the timid or the reckless can safely venture.

"When you are into the extreme, you have to be willing to crash and burn a whole lot," observes Alan Vaughn, a junior at Clarion University and a mountain biking enthusiast.

Extremist sports ... are "a healthy and socially responsible way of getting high."

Groundhog Day is worth it



Mike McGrath

Avion Movie Critic

Groundhog Day

Starring: Bill Murray, Andie MacDowell, Chris Elliot

Rated: PG

Rating: ★★★

Length: 1 hour, 50 minutes

Playing: Volusia Square 8 Theatres

We have all had those bad days. You know the kind I am talking about. You wake up and the first thing you do is stub your toe on the corner of the bed. Then you drink orange juice just after brushing your teeth, then you trip over the anvil in the middle of the room.

To finish things off, you cut yourself on your roommate's pressed and starched blue jeans. One of the kind the ROTC sergeants tell you have to be so sharp and thin that you could use it as a weapon. Except that, in my roommate's case, he does it by choice.

Groundhog Day stars Bill Murray, Andie MacDowell, and Chris Elliot as a news crew assigned to the coverage of the furriest weatherman, Punxsutawney Phil.

In case you didn't know, he is a groundhog who can predict the length of winter. This is just the set-up for the plot. Murray's character has one slight problem: he relives *Groundhog Day* over and over.

One would think that this film would become boring pretty quick-

ly, but thanks to writer Harold Ramis, one of the *Ghostbusters*, this movie is unique in its plot twists-and-turns.

This film turns *Same Crap, Different Day* into *Different Crap, Same Day*. Unlike the episode of *Star Trek* where the Enterprise keeps blowing up over and over until Data the human toaster saves them, every day is different. Murray has his ups and downs, but comically gets through it all.

We get to see the many sides of the same day as Murray tries to romance his producer, Andie MacDowell.

He only has one day to get everything perfect or else he has to start over the next day. Because of great writing and acting, no scene is the same.

Chris Elliot, along with many other noticeable faces, contributes a small amount to the overall plot. This movie is all Bill Murray. The only one that comes close to stealing the spotlight is Andie.

Bill is so close to getting the woman of his dreams, but he always fumbles on the one yard line.

Overall, I liked the movie very much. It had all the things I look for in a good movie. Great acting, writing, humor and storyline are all ingredients which make a good movie.

I know the movie is rated PG, but a harder rating does not guarantee a better movie. After all, *Body of Evidence* hit the dollar theater. If you want to watch a great movie, *Groundhog Day* is for you.

If you want to see a funny movie at a low price, try *Hesed*. It includes lots of cheap thrills for the price of one. If you want to see the world's thinnest, sharpest, and toughest Wranglers, stop by and see me. I am thinking of making them available to the viewing public, along with the anvil.

★★★★ - Can't miss!
★★★ - Worth watching.
★★ - Wait until dollar theatre.
★ - Read a book instead.

The Top Ten Albums On Campus

- | | |
|---------------------------------|--------------|
| 1. <i>Zeppelin Four</i> | Led Zeppelin |
| 2. <i>We Can't Dance</i> | Genesis |
| 3. <i>Metallica</i> | Metallica |
| 4. <i>Ten</i> | Pearl Jam |
| 5. <i>Synchronicity</i> | Police |
| 6. <i>Joshua Tree</i> | U2 |
| 7. <i>Dark Side of the Moon</i> | Pink Floyd |
| 8. <i>Roll the Bones</i> | Rush |
| 9. <i>Hysteria</i> | Def Leppard |
| 10. <i>1984</i> | Van Halen |

Note: Of 90 people polled, 5 said they didn't have a favorite album
Source: Informal Avion Poll

Interceptor is not the usual fight/flight movie

By David Gass
Staff Reporter

There are some movies that just weren't meant to be made. The basic plot is O.K., the characters have depth and the actors are well-established and talented. But, perhaps through some writing defect, or maybe because of technical flaws in production, the movie ends up being at best a mediocre show, but usually winds up as a boring and visually dissatisfying waste of time.

Interceptor is basically a military/action/adventure movie that is pretty much a ripoff of the *Diehard* movies except all the action occurs while in the air. It does, however, have its decent moments that does make it tolerable to watch.

Interceptor stars Jurgen Prochnov as Phillips, the lead villain in the movie. Andrew Divoff portrays Captain Christopher Winfield as the Bruce Willis-type hero.

Finally, Elizabeth Morehead stars as Major Jonah Morgan, the only female in the movie.

The story starts out as Captain Winfield pilots a Stealth by a special helmet which helps him fly with virtual reality. Something goes wrong and he has to ditch the plane.

He then is escorted onto a C-5 to be flown to another base to be re-assigned due to his ditching of the plane. The C-5 also just happens to be carrying special cargo which includes two F-117 Stealth fighters in - get this - desert camouflage.

Everything seems to be going well until the C-5 has to be refueled while in the air. Unfortunately for Major Morgan and her crew, they are boarded by terrorists while supposedly being refueled.

This is when the movie becomes a little gory and when there is actually a little action and suspense happening in the movie.

The movie's ending is very predictable and is pretty much just another terrorist movie. Nothing really special.

For those who enjoy making fun of bad movies, this would be a good choice. As if the plot holes weren't enough, *Interceptor* has serious technical flaws that are easily apparent to the knowledgeable aviation student. Among them is the fact that they have collapsible wings on the F-117.

If you are an action/adventure movie fan and a lover of aviation who doesn't mind watching a *Diehard* wannabe, then this may be for you.



Interceptor falls short of basic technical expectations.

If not, keep looking through the video store; you'll find something eventually. Even if it is in the cheap-

ly-priced section, chances are that the movie you pick will be better than *Interceptor*.

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Insulting comments courtesy of Ren

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Fellow Students,

The Graduate Student Association is considering sponsoring a "Graduate Ball". Through the questionnaire below we seek responses from the student body to begin setting up the Graduate Ball. The Ball would be held at a local hotel with a open bar of beer and wine.

Please check your desired response.
Questions:

- 1) Would you like to attend a "Graduate Ball" ?
a) yes.....
b) no.....
- 2) What is your current student status ?
a) Masters.....
b) Senior.....
c) Junior.....
d) Sophomore.....
e) Freshman.....
- 3) Besides Masters Students, who do you think should be invited to attend;
a) Seniors only.....
b) Juniors and Seniors.....
c) Freshman to Seniors.....
- 4) Given the choice of formal or semi-formal attire/setting which would you choose?
a) formal (tux).....
b) semi-formal.....
- 5) What price range would you consider reasonable, (Dinner expense per plate & entertainment.) ?
a) \$40-\$50.....
b) \$30-\$40.....
c) \$20-\$30.....
- 6) Should family members of graduating students be invited?
a) yes.....
b) no.....
- 7) As the Spring 1993 Graduation Ceremony occurs on Sunday, when do you feel the ball should be scheduled?
a) Friday.....
b) Saturday.....
- 8) What do you think is the best start time?
a) 5 pm.....
b) 6 pm.....
c) 7 pm.....
- 9) Would you prefer a DJ or a band?
a) DJ.....
b) band.....

Please respond to: C. Lee, ERAU Box
9192

AAS

By Captain Long
AAS Advisor

Embry-Riddle's Air Force Arnold Air Society hosted the former four time Female World Surfing Champion, Frieda Zamba, Tuesday night, January 26. Ms. Zamba, who lives in Flagler Beach, spoke to the cadets about personal motivation, setting high goals, and about never giving up on dreams.

Ms. Zamba was born in Flagler Beach, FL, and started surfing when she was twelve. She entered her first Eastern Surfing Association contest in 1978. She turned professional in 1981 and joined the Association of Surfing Professionals. In her first professional contest, The Mazda Women's Surfing Championship, she surfed a perfect contest. Later that same year she was named "Rookie of the Year." In 1984 Ms. Zamba won her first World Championship. She followed in 1985 and 1986 with two more back-to-back World Championships and was selected for two Surfer Poll

Awards, given by the surfing fans as the most popular surfer that year. In 1987 Ms. Zamba was injured and missed so many events that she couldn't retain her championship. She stated that "1987 was the turning point in her career." Being off the entire year led her to re-evaluate her life and what goal she wanted to set for herself. No other women has ever won four world titles and Ms. Zamba decided she would be the first, and so in 1988 she returned to the professional circuit with new goals, new dedication, and a vengeance for perfection. In 1988 she completed her quest for her fourth world championship and retired from professional competition.

No other women surfer has ever won four world titles and Ms. Zamba is in the record books as "Imly a real peoples champion." Ms. Zamba concluded her discussion with the Air Force cadets by challenging them to set high standards, believe in yourself and your family, and most of all "never give up on a dream."

AXA

By Craig Morse
Writer

Top ten reasons Lambda Chi Alpha doesn't have a house:
10. Mike M., Mulawa and Quinn's dates wouldn't fit through the door.
9. We can't afford Rem's hospital bills.
8. Quinn, Brenda and Chuck would eat all the food.
7. Barry's toilet paper costs would level the housing fund.
6. Alan, Darrel and Brian would kill the beer.
5. Brendon's van would arouse the local drug enforcement agencies.

4. We can't afford to pay for Rui and Vinny's hair gel.
3. Craig's Grecian formula is pretty damn expensive.
2. Marcus jail bond for statutory rape wasn't in the budget.
1. Blake would ban everyone from the house after the first party.

Mr. Wizard's fact for the week:
Five uses of rubber gloves:
1. Protection.
2. Sanitary.
3. Makes interesting noises.
4. Protection from those interesting fluids.
5. Better than Ren's rubber nipples.

AEA

By Becky Kencik
Pledge Educator

Rumor has it that we have a list of some sort. We made this up to measure the insecurity of the male population at Riddle. The joke is on you...Chet!

Pledges, we are anticipating our special surprise tonight. I think it will be worth missing our ritualistic Bev/poker night. Congratulations to Pledge Danielle for cleaning up Wednesday night, Pledge Shelly, has today been heartfelt? Pledge Alisha, I hope you show up next Wednesday

night because it isn't nice to win and run. Pledge Suzan, we have been missing you on Wednesday nights. How are your best friends doing from the Mirror Pond party? Pledges Kerry and Jeanette, we've been missing you at softball. Rumor has it that you guys are good.

Big sisters, start getting involved because these are the times shared that are the most memorable for the Betties, I mean Beta's.

We are all looking forward to our initiation as well as our installation this weekend. I guess it's about time. No more pledge jokes.

SPI

By Tore Gudroed Markussen
Head

Brothers, pull the chocks and get ready for another Avion article. Evidently, last week's article was lost somewhere in the Avion's cutting room floor and never made it to print. Although this is a trifling situation, let's proceed with this weeks current events.

This past week marked the arrival of Suzette for her yearly pilgrimage to Daytona Beach. She took time out from her busy flight schedule to help celebrate Sigma Pi's "Academic Awareness Week." Headed by founder AAW, Jack Snyder, a meeting was held at several local establishments to promote the scholarly campaign.

Adding to the festivities was none other than Brother Jaws who, with the help of you know who, became decorous for polishing off several beers at our new european "Bibliothèque." Several discussions were also held in school and social related areas. Some of the topics

covered in the annual seminar included corpulent dynamics and chaser physics. It is hoped that next years event be equally as successful as this years and that the brothers learned something.

I'd like to welcome back the brothers who traveled to North Carolina for the past weekend. I hope you guy's got what you were in search of. Because we Pi guys love women, this years Valentine's Day was an exceptional experience.

Joining us in our tribute to romance was our lovely friend "Savannah" from the popular new T.V. show "Key West." Thank you Brother Stairs for volunteering to pick her up and fly her back. Who ever thought a chicken hawk could be so versatile in so many ways?

On February 26, we will hosting a semi-formal celebration for our Founders Day. This event will be followed by the Greek Toga Party. For RSVP, call ALS GERM. Sixty-seven days left until graduation!

Finally, try and decipher this weeks word scramble...
ODRETRHIGS.

SAA

By Krissy Kopecky
Member

Hello everybody! I apologize for the missing article last week, with convention and everything else, there wasn't any time.

Speaking of the convention, I think any of the delegates will tell you that we had a great time. It was both educational and entertaining. We've come back with a lot of new ideas for the SAA. Embry-Riddle was recognized for its outstanding spirit and won the school song/cheer competition with a song that was literally written in a few seconds. We

met delegates from James Madison Univ., Georgia Tech, Univ. of Southern Mississippi and so many more.

Hopefully this will be printed before the NAS Mayport Trip scheduled for Feb. 27th. If so, don't forget that we will be leaving around 10:00 a.m., contact Harry Shum for details.

Our T-Shirt design has been decided on. It will be gray with blue and gold lettering. Look for them to be ordered soon.

Don't forget...meetings are 5:30 p.m. on Tuesdays, the Executive Board meets on Thursdays at 5:30 p.m., in the Spruance Hall conference room and everyone is welcome.

ΔX

By Robert Telep
Public Relations

Let me start off by babbling about the past two weekends. First I would like to thank the Beverage Committee for the time and effort they are putting in. The "Poker Social" on Saturday was a success. Congrats goes to Joe who eventually won. If anyone is interested in touring the basement, please see Lou who marked his territory once again. Fund-raising is looking good. We worked the track this past weekend and many more events have been planned. Hopefully we will reach

our estimated goal by the end of the semester.

On Sunday is Adopt-A-Highway. We will be picking up the trash on Clyde Morris between Beville and Rt. 92. Everyone is expected to show up wearing jerseys for this action packed, fun-filled event.

With our athletic ability at its best, intramurals are looking good. Eventually we will figure somewhat of a game plan. If anyone is interested in participating, please see Jeff of Jim.

Associate Member, you guys are doing a good job and keep up with the work!

Clubs Policy

- All articles must be type-written, double spaced or on disk format (unformatted in Word Star or Microsoft Word).
- Deadline for submission of all club material is Wednesday at 5 p.m., one week prior to publication.
- Photos may be submitted with club articles.
- All submitted material becomes property of the Avion with the exception of disks.
- The Avion reserves the right to edit all submitted copy.
- For more information stop by or call the Avion office at (904) 226-6049.

Semper Fi

By Mark Bosley
Public Affairs Officer

I'd like to begin by thanking Major Whelehan and Captain Merchant and Gysgt Bivens for attending last week's meeting. Keep in mind the Major's words on what being a Marine officer is all about. It was a motivating speech and should be taken to heart.

Also thanks to the OSO staff for arranging the orientation flights. The flights were conducted in a twin-engine, six-seat Piper Seneca.

For those attending OCS this summer, keep up the PT, it will pay off. Slots are available for future OCS classes. For more information call the Marines at 1-800-432-2061 or stop by the table outside the U.C. on the next visit by the OSO staff.

Semper Fi.

Riddle Riders

By Rob Sternisa
Vice President

The 1993 school year started for the Riddle Riders with all new club officers and a new club advisor. We would like to welcome Mr. Milad as our new advisor. Also, the new officers are: Steve Boylan club PREZ, Rob Sternisa - VP, Roy Perkins - Treasurer, and Greg Meech - Secretary. Thank you exiting officers Mike, Doug, and Aaron for all the hard work that has been done in the past. Also, best of luck and congrats go to Aaron Vogt with his new job in Texas. Enjoy those fuel tanks and don't get sealed in on the job.

The remainder of the semester looks to be fun filled with enough excitement to keep everyone content. The biggest part of the semester is of course, BIKE WEEK '93. Members of the club will be participating in a number of events, including poker runs, bike shows, race

events and the grand finale of the week - the bike parade from Bellaire Plaza to the Daytona International Speedway with thousands of other motorcycle enthusiasts from around the country. Be sure to check the Riddle Riders display case outside of the SGA Office for a complete schedule of events. A number of members will also be working at Sundance Leather Shop on Main Street during the mayhem. We are still looking for a few more students to help with various shifts. Earn some extra cash by selling t-shirts while supporting the club!

Upcoming events include a picnic/beach ride along A1A, camping, the Riddle Riders Spring Rodeo, a trip to the Warbird museum in Kissimmee, and weekly plaza inhaling trips. Club meetings are on the 2nd and 4th Thursdays in February and March in Rm. E-601 at 7:00 p.m. All students are welcome. For information, call Steve at 257-9711.

ΣΤΔ

By Jennifer Bailey
Member

On Saturday, Feb. 6, we finally went on the much fabled Salvador Dali museum trip. Several members brought friends and family along as we car pooled over to St. Petersburg, braving the fog, rain and early Saturday morning hours for the honor of viewing this surrealist's work. I think all who were able to go would agree that the experience was well worth the drive. "...I'm not mad."

This semester, along with the humanities department, we are sponsoring a short story contest, (very short—less than 250 words). The

deadline for entries is March 1. The entries must contain some mention of an aeronautical theme, in keeping with the spirit of ERAU, in order to be eligible. First prize includes a cash reward of \$50, and winning entries will be printed in both the Avion and the next issue of Creations, so be sure to get those submissions in to Dr. Pratt in humanities ASAP.

A reminder to all new members, the deadline is coming up for turning in the required essays, letters of recommendation and fee. These items must be handed in by our next meeting, the week of the 15th. Members will be contacted prior to the meeting with information on exact time and place. See you there.

A.A.A.E.

By Peter McIntire
President

I would like to thank all the members that attended the February 10th meeting. For those who could not make it, Jeffrey R. Lewy spoke about his experiences at the Orlando International Airport. Topics that were covered were strategic planning, terminal development, and the future expansion and plans of the airport.

Our next meeting planned is Wednesday, February 24th. The speaker will be Al Gulamali, Assistant Manager of Operation at Jacksonville International Airport. He will speak to us on his roles and

jobs as an operations manager at the airport. This meeting is important if you plan to participate in the airport tour in Jacksonville on Friday, March 5th. On March 5th, we will be leaving ERAU at 1:00 p.m. and transportation will be provided. Hope everyone will be able to participate.

As always if you need any further information about the American Association of Airport Executives you can leave a message in our box in Student Activities.

Once again our next meeting is on Wednesday February 24 in room 206A (second floor Spruance Hall) at 7:00 p.m. Please make plans to attend.

ERFSEDS

By Keith Sterner
Public Relations

Attention ERFSEDS members this is a big activities weekend coming up! Be sure that you are a part of it, or else you'll loose out. We will start off the weekend with a lecture at Florida Tech. The cost is \$10 and includes a banquet dinner after astronaut Bob Crippen's talk. There is limited space available, so we had to request advance registration to be in by 02/11/93. If you haven't reserved your slot in advance, don't hesitate to ask an officer about the possibility of there still being a place for you.

On Saturday morning at 9:00 a.m. we will be at Space Camp. This event is also limited in numbers, which have already been filled, but once again check with an officer to see if any openings have been secured. We will be participating in a three hour program that introduces the participants to many of the simulators through a brief explanation and chances to ride them. Each person should get to ride something, if he/she chooses to. We will also have the opportunity to view the new Shuttle to Tomorrow exhibit as well as the Astronaut Hall of Fame. It will prove to be a day of great fun for all who attend.

After our last meeting we had our

first external speaker, Lt. Col. Richard T. Headrick (USAF Ret). Lt. Col. Headrick was a B-17 pilot in W.W.II. He spoke about the missions the B-17's were involved with. His speech was both inspiring and interesting.

At our meeting on 02/09/93 the club voted on (and approved to) sponsor the reception the first night of Women in Aviation Week. The guest speaker that evening, Monday, March 15, 1993, will be Captain Kaye Downing (US Navy Ret). Marilyn Sheddin, our advisor, will be announcing her to the guests. The evening will also include light refreshments and a door prize drawing.

We would like to thank those special members that aided in the IROC/Dodge fundraiser on Friday, 02/12/93. This was the first time it was offered to the school, and we are glad to have been able to help out the Chrysler Corporation. It was an awesome opportunity that brought the club some much needed money. Your efforts will not go unnoticed.

Our club recently received a glass box location. We will be displaying important information, for those of you who cannot make it to the meetings as well as other space-related items. It is located in the west hallway of the SC, by Health Services. AD ASTRA PER ARDURA!

Ninety-Nines

By Jennifer Warren
Vice President

Hey, women pilots! It's time to catch up on some of the news about your fellow ninety-nines. On the career front, we have our former president Laura Brewer forging a great future for herself, as well as a promising stance for women in the field of aviation. Not only will she be flight instructing out in sunny San Jose; she will also serve as a liaison for the satellite operations of Embry-

Riddle out in California. Congratulations, Laura!

Meanwhile, back at the flight line, Evening Dupre has achieved her MEI rating. Way to go! We have compiled a list of upcoming events for the semester; make sure that you receive your copy! Our next meeting will be held on Wednesday, February 17 at 1730 in room B516. One of the things we will be discussing is the potluck dinner, scheduled for the 21st. New members are always welcome, so come join us!

SCUBA

By David P. Hegedus
Secretary

Recently, the Diving Eagles Scuba Club took a trip to the Gulf Coast to Crystal River to do some diving with the sea Manatees. This particular trip turned out to be very interesting. The scuba club did manage to complete some time scuba diving, but unfortunately, did not see as many Manatees as they had hoped. But, on an up note, the Diving Eagles did manage to notice

a Dolphin or a Porpoise swimming nearby. All in all, the divers had an extremely enjoyable trip.

The next meeting for the dive club will be held Wednesday, February 17 at 7:30 in room B-506. Topics discussed will include a future trip to West Palm, and other trips including a revisit to Crystal River. If there are any questions, feel free to leave a message in the Diving Eagles Activities office in the U.C. Anyone who is interested in becoming a new member is also welcome. See you there!!

Senior Class Council

By John Luke
Communications Chair

Several awesome plans for the Spring 1993 senior class were discussed by the Senior Class Council at our meeting last Wednesday night. Mark Hogan, Senior Class President and Shana Benton, Senior Class Vice-President, led the informative meeting which covered a multitude of organizational matters.

Mark Hogan began the meeting by going over the committee assignments and meeting times. Then, Shana Benton talked about budgets.

Shana wants estimated budgets from each committee by tonight's meeting for anticipated expenses and revenues. Tonight's meeting of the Senior Class Council will be at 7 p.m. in room E-609. Members of the senior class (students graduating Spring 1993) are invited to come and join the council.

Also, at the last meeting, Linda Zinn, Senior Class Council Secretary, wanted everyone on the council to ensure that their information on the roster was accurate and

that they were listed for the appropriate committee assignments. Tom Hanson, Senior Class Council Treasurer, gave some numbers to the council, of the money he believes the senior class now has. Then, each committee chair talked about their progress since the week before.

For your information, the Senior Class Council consists of the following individuals assigned to the following committees:

Officers: Mark Hogan, President; Shana Benton, Vice President; Tom Hanson, Treasurer; Linda Zinn, Secretary; Laurie Ranfos, Adviser.

Discount hotel car rental: Pedro Dashi, Mitch Matheson, Brian Parker (Chair), Bernard Schwartz and William Willes.

Social: Don Bennett, Scott Clark, Jonathan Famous, Brian Farrell, Elise LaMartina, Chris Lind, Scott Melvor, Steve Schurig, Bridgett Smith and Genese Turner.

Faculty/staff appreciation awards: Steven Burnett, Grant Covington, Tom Hart, Joan Henrichs (Chair) and Phillip Kahler.

Communications: John Luke (Chair).

Naval Aviation

By John Radice
Member

Greetings Naval Aviation fans: This weeks meeting went well, as those of you that attended know. Our guest speakers were L.L.J. Andrew W. Neil and Lt.J.G. Rick Golbitz from NAS JAX. Both are currently P-3 Orion pilots. The two explained the steps of becoming a Naval Aviator and humorously described the good and bad aspects of Naval Air Training. Following

their video presentations, the pilots held a brief Q&A session.

Our softball team made an amazing comeback during last weekend's game against the undergrads. The score ended up in a tie of 7-7. We do need more of you to come out and play, so check our board in the U.C. for practice times and dates.

The Navy Club meets on alternating Wednesdays at 1930 in A-109. Our next meeting is on the 24th, new members are always welcome.

FLY NAVY!!!

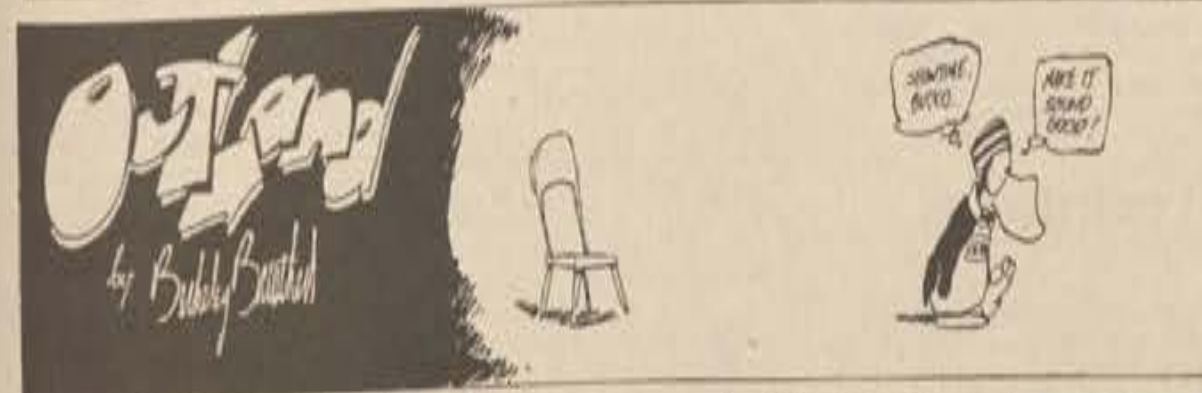
Calvin and Hobbes

by Bill Waterson



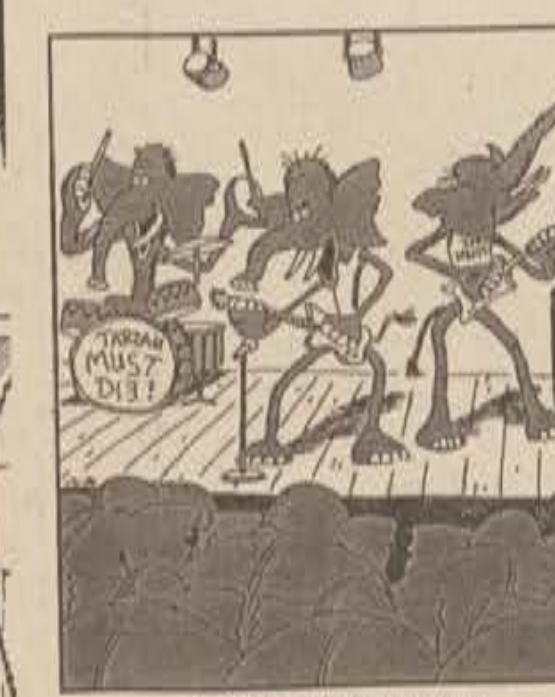
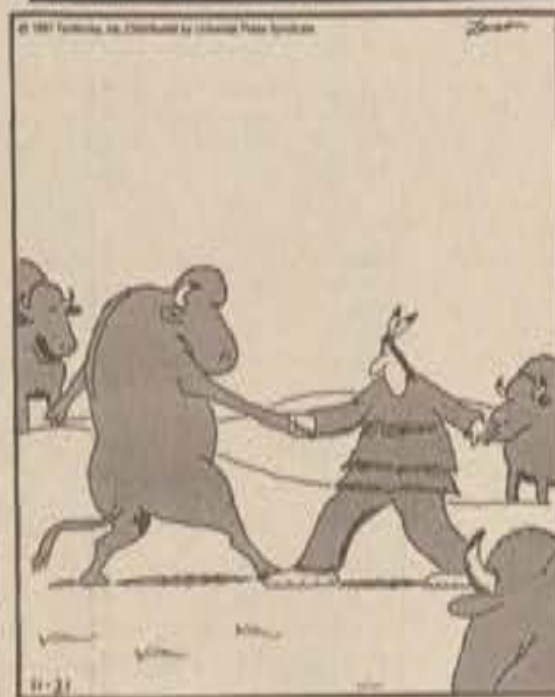
Outland

by Berkeley Breathed



Far Side

by Gary Larson



The Angry Young Pachyderms

"Well, Douglas! ... I noticed during the exam your eyes weren't exactly rotating this way and that."

→ Autos for sale

Buying a vehicle? Buy from a Riddle alum. New and used cars and trucks/program cars. Contact Mark V. Morano at Gary Yoman's Ford executive car sales. 947-4455. Bring this ad!!!

Camondale Series 1.0 Roadster, blue, has elliptical cranks. Paid over \$900 new, will sell for \$450 obo. Call Paul @ 255-9574.

1983 V45 Magna. For sale \$1000 obo. Call anytime. 238-7700.

81 Ford Granada. Runs terribly. High mileage. What isn't ruined is faded olive drab color. Can get from 0-60 by going down hill with a tail wind and drafting off a tractor trailer. Street legal in most southern states. Asking \$8,000 obo due to high sentimental value. Call Brian at 555-8444.

69 Camaro. Not a showcar, but a good driver. 327 484, M-21 4spd. \$2000 or so. Call Ken or leave a message. 760-9265.

Motorcycle For Sale: 1986 Honda VFR 750 R/V/B. Fast, reliable, sharp, \$3100 obo. 750-4860. Ask for Steve.

→ Roommates

Need a place to live? 2 bed, 2 bath apt. Island Club. Partially furnished \$292.50 and 1/2 utilities. Washer and dryer, tennis courts, jacuzzi. Must be quiet, clean, non-smoker, trustworthy. Available May 1st; 1 yr. lease. Call Chris @ 767-0730.

Roommate for rent. Slightly used but still in good condition. Rent for any length of time. I am a party animal and I don't bite unless you want me to. Call Brian at 555-8444.

Has renting an apartment got you down? Purchase my 2 Bed / 2 Bath Condominium. It's a buyer's market out there, and now is the time to invest in real estate. Call today for more details. 788-4343

→ Misc. for sale

For Sale: Fish tank. 30 gallon set-up complete with fish, AGV motorcycle helmet, Sony portable CD player with dual cassette deck, Sony receiver (as seen in Sparty's), Schwinn Mountain bike. Call Kevin @ 253-8235.

For sale! Furniture including 2 love seats, 1 sofa, 1 sofa bed, 1 dresser/drawer and assorted tables. Best offer will be accepted. Call Stu @ 238-0639 anytime.

For sale! Microwave for sale - Kenmore, like new. Need to sell. Will take best offer. Call John 238-1829.

For sale! Magic nose goblin collection. Freshly picked with my own hands. Asking \$2. Call Brian at 555-8444.

Takes headset for sale. Lightweight, never used, best offer. Call "Plan" 234-8988. Airline T-shirts and stickers! Largest collection in the area, we will be selling on campus Thursday and Friday in the U.C. Look or use!

For sale! Brand new box spring & mattress with headboard! Asking \$75 obo. Must see to appreciate! Call 322-7604 & leave a message.

Telex headset for sale. Lightweight, never used, best offer. Call "Plan" 254-8988.

DOWNTOWN USED FURNITURE 9000 sq ft. showrooms. Tues.-Sat. 10-5:30 406 N. Beach St. Daytona 239-9884. Buy and Sell.

For sale: Two cordless phones \$20, \$35 each, bamboo screen 8 x 10 \$15, 5 1/4 disk drive and controller (beantown in box) \$40, remote control car \$30, other interesting stuff as well. Call 788-4972

For sale: Winchester 1400 12 ga auto shotgun w/ 18" barrel and pistol grip. Blasted for a mere \$220 obo. gun is in mint cond. Call 788-4972

Like new, full size, washer and dryer free delivery Charlie 756-8267

New Flightcom Headset for sale. Contact Sean @ 226-7534 or box 6798.

→ Miscellaneous

Flight instruction. Pet., comm., multi., and instr. Contact Kevin Lapinacci @ 253-8235.

Interested in helicopters? Trying to build time for my helicopter CPL. Will give 1 hour into ride for cost of gas. Contact Chris at ERAU box 9147 or 274-2210.

Multi-engine airplane cross country shared expense flights: 1. Daytona - Paradise Island leisure weekend 3/12/93. 2. Daytona - Tampa, 3/12/93 Altitude chamber field trip. 3. Daytona - Atlanta 4/8/93 Delta Airlines headquarters tour. Call (904)226-7563.

NEED MONEY FOR COLLEGE. Send SASE for details to: College Financial Planning Assoc. 4311 NW 53 Ct. Coconut Creek, FL 33073. Attn: Annette Greco.

Multi-engine flight training. \$70 hr. block time. Initial rating of MEL. All other certificates and ratings also available. Don 677-9730 Professional Innervations (FAA Licenses, etc.)

CRM Citation for 1st officer bidoo. 747 Pilot eye view video. 737 systems diagrams manual. "1993" written test books. "IFR" video courses. Handheld loan transceiver @ pilot ground school tutoring. Call (904)226-7563.

Get your CFI fast and cheap! 1200 hr. flight instructor. Fly out of Daytona. All other ratings available. Call Ken or leave a message at 760-9265.

Flight instruction - private, commercial and instrument. Quality instruction, fun and no hassles! 7 years flight experience. Call Alan (904) 248-2539

Ralph Nader presides at Embry-Riddle. Thank Charlie for that personal recommendation to security: Motor vehicle code 316.29(5a). It's people like you that killed the British car-E-Type P.S. Sir Edward Lyons would frown on you.

Kim, Sorry I couldn't make it the other night. I had a C.N.J.B.O.A. (Compulsive-Nose-Hair-Braiders-Of-America) meeting. Could we try again next week? Love Melvin

To Leo, You're a great RA! Love In East

CLASSIFIED AD POLICY

- Non-commercial classified advertising and personals are free to the student body, faculty and staff of Embry-Riddle with 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, at 226-6051.
- 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.
- Only paid ads will run for two issues and may be renewed by filling out another classified ad card.
- No classified ads will be accepted over the phone.
- For more information, stop by or call the Avion office at (904) 226-6049.

Skydive! First jump course only \$120 come experience the thrill and freedom of the #1 adrenalin sport in the world. Ground school taught here on campus. Call now to reserve your place. 788-4972

How has your car been running? If it needs help give me a call. ASE Certified mechanic. Patrick 255-2132 ps: If I didn't call you back, you didn't leave me your #.

EARN EXTRA INCOME! '93 Earn \$200-\$500 weekly mailing 1993 UWIT travel brochures. For more information send a self addressed stamped envelope to: Travel Inc., PO BOX 2530, Miami, FL 33161.

Is anyone planning to drive through Richmond, VA on the weekend of Feb. 27-28? I need a ride out-way and will pay 1/2 gas and help drive. Contact Russ @ 222-2732.

→ Personals

To the guy with the big hard anvil, why don't you come over and we'll pound some iron. You can heat me up and bend me into shape. Your Secret Cowpoker.

Ellen, I still lust for you! Storytime, Hey Rude McClausk, ICC OCAT ANUT AND GURTLIC

Michelle Rochelle, Whipped? Kramer and George

SWM seeks SWF with nice T's and a small A. Come on girls. No IQ required. Write Mike at box 7808.

Kynall, Less than five weeks and it's permanent! It's going to be a great life! Care for a sidewalk story? I love you. Jeff

Watch out Det. 1571 Charlie Flight is going to astound you this semester!

Shannon If I ever fall in love again, I'll be sure that the lady is a friend.

Jason Morrison, I want you, but I've seen you with the brunette girl from McKay and I guess you wouldn't have time for me. Is she your girl or can it be me. From Desperate Body

If you graduated from OMCS (not you, Mike) and have been trying to contact me, Call me. Brian @ 767-8454.

To Hector and Gerald, Chirp! Chirp! Chirp! From Ha! Ha!

Miss Jeanette, Congratulations on choosing to pledge Alpha Xi Delta! The gentleman without a name.

To Woody, Hi Carlos, como estas? Dame un beso! Que significa febrero 13, 1993? Love, Little Girl

To Francis, Hey you sexy dong! Happy Birthday and most importantly remember to always keep a tight ... Love Marilyn

I never hit the double digits.

Geraldo, Stop crying! Chirp, Chirp is not going to get you! Don't forget to smile when it goes flash! Sincerely, Ha! Ha!

Carrie, Irelia and friends, Thank you very much for the surprise party! It was great! Love, Little Girl

Number 69: Hey you fly dude! Do fries come with that shake? A peach with that swing? Think airline! Owl! Love Number 68

Due to the founder of the motor-scooter club buying a Toyota Camry, the club (henceforth disbanded). Since the only common bond is our virginity, the continuation of an alliance would raise questions of homosexuality. Not that there's anything wrong with it.

Squadron Blackers, excuse me, squadron one, "Squadron unity, squadron two, squadron one, knocked out of the blue!" Squadron two

Bravo flight, Nice try with the eggs! Too bad it didn't work! Charlie Flight

Brian is a weenie.

"the public is raving about Charlie Flight!" NY Times

Ms. Hansen and Ms. Donovan, give Charlie Flight two thumbs up!

Hey Squadron One! Did you enjoy extra drill on Sunday (2/7)? Squadron Two

To my Secret pal Drop it - I'm taking! Box #6926

Alpha and especially Bravo are in serious trouble - USA Today Charlie Flight

"Charlie Flight is definitely warrior flight material!" Orlando Centennial

I'm from Home Depot and I'm here to say that I love Fudgesake! The Home Depot Man

BRUNROB, You're smart, you're good looking, are you attached? My inquiry is of personal nature, not Technical. A curious classmate

Saugglehenry, Hi honey, I love you. Sorry about the fight at the game. I'm yours. Happy unofficial anniversary. (Late) Stay sexy. I Sear! Love always, Sucree dumpling Around!

To gayboy from N.J., Hope to see you at the next G.A.L.B.A. meeting. We sure did have fun at the first one, didn't we? When are cheerleading tryouts? I'll be your partner. Love, me

Michelle & Rachel Moooooooooooooooooooooooooooooooooooooo. Hope this past weekend was a good one, the cowpokers.

GREEKS & CLUBS

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Name: _____

Address: _____

Address: _____

City: _____ State: _____

Zip: _____ Country: _____

Rover

(continued from page B1)

The Russian team will consist of representatives from the Russian Academy of Science's Space Research Institute (IKI), the Babakin Center (the primary supplier of interplanetary spacecraft for the former Soviet Union) and the Mobile Vehicle Engineering Institute.

This team developed and operated two unmanned "Lunakhod" rovers that successfully explored the moon's surface in the 1970s, and is now preparing a "Marsokhod" vehicle for the upcoming Russian Mars '96 mission.

The six-wheeled prototype being tested in Huntington Beach is already familiar to some Western aerospace experts.

The Planetary Society, a non-profit space research organization, introduced the prototype to America during a series of demonstrations in the Mojave Desert and a rover exposition in Washington, D.C.

Wormholes

(continued from page B1)

A naturally occurring wormhole would also not be stable. It would appear, then expand to its maximum tunnel radius and finally retract to zero. It would do this so rapidly, that even a craft moving at the speed of light could not make the entrance.

So, it would seem, wormholes would be worthless for use in space traveling purposes. Well, not really. The use of wormholes, their theoretical consequences and their relationship to the theory of quantum gravity will be discussed in the next installment of *The edges of science...*

The information contained in this article was gathered from the following sources available in the Jack R. Hunt Memorial Library:

Wormholes, Time Travel and Quantum Gravity by Redmount, Ian, *New Scientist*, 28 April, 1990, pp. 57-61.

Cosmic Time Travel by Freedman, David H., *Discover*, June 1989, pp. 58-64.

Maker of Worlds by Freedman, David H., *Discover*, July 1990, pp. 46-52.

TCDT

(continued from page B1)

While at KSC, the flight crew undergoes training in topics ranging from egress classroom training and equipment fit checks to M113 armored personnel carrier orientation and driver training.

During a trip to Launch Complex 39-A last Thursday, the seven man crew along with the two alternate payload specialists practiced emergency egress from the launch pad through the use of the fixed service structure slidewire system. One of the seven baskets was brought down to the slidewire landing facility where three of the astronauts familiarized themselves with the operation of the basket.

Additionally, the crew was briefed on the operation and procedures used while in the bunker, located approximately 1,200 feet from the fixed service structure, near the slidewire facility. Furthermore, commander Steven Nagel and pilot Terrence Henricks took the shuttle training aircraft to the sky to practice approaches to the shuttle landing facility, where *Columbia* is scheduled to conclude its nine day flight.

The crew met with the press at the slidewire facility in which German astronaut Ulrich Walter said that this shuttle flight was a prelude to the international cooperation that will be involved during Space Station *Freedom* operations.

The seven man crew will return to KSC four days prior to the scheduled launch day, now set for mid March, to undergo final launch preparations and prepare for the German spoclab flight.

Training

(continued from page B1)

The Vertical Motion Simulator, as it is called, consists of a crew cabin which moves horizontally along a thirty foot long beam. The beam can move up and down within a five story building giving the astronauts the most realistic feel possible for a shuttle landing.

The crews also use another simulator, called the Shuttle Mission Simulator (SMS), designed to mimic the systems and procedures used during most of the shuttle mission, from launch to landing. The same software used in the actual shuttles are used in the SMS. The system also simulates the movement felt by the crew during an actual shuttle ascent or entry.

SMS training sessions include what is called "mission specific" training, which begins approximately eight to nine months before the scheduled launch date. This training involves extensive failure practice and flight-similar procedures, where the instructors act as mission controllers.

The astronauts then go into their specialty training such as EVA training, where they don special space suits and perform various functions in a large thirty foot deep water pool that contains a mock-up of the shuttle's payload bay.

Astronaut training at JSC continues until three days before launch when the crew then departs for the Kennedy Space Center for the real thing.

Join the Avion!