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Embraer makes 4,500th delivery

Embraer Press Release

Embraer today made its 4,500th delivery - to Pantanal Linhas Aereas Sul-Matogrossenses, a new regional airline formed this year at Campo Grande, in the State of Mato Grosso do Sul, which has orders for three aircraft, including one option.

Embraer was founded in August 1969 and started operations in January the following year.

Its first delivery, the EMB-200 Ipanema airplane, was made in February 1972.

In the past 20 years since that first delivery the company averaged annual deliveries of 225 aircraft, including types developed in-house and those built under license.

These ranged from piston-powered aircraft such as the already

mentioned Ipanema, deliveries of which have exceeded 700 units, through turboprops for regional airline and military applications.

These include aircraft such as the EMB-110 Bandeirante, with 500 deliveries, the EMB-120 Brasilia, with over 260 deliveries and the EMB-312 Tucano, with more than 500 deliveries.

Also included are attack jets such as the AMX, deliveries of which have recently surpassed the mark of 100 units.

Embraer celebrated last August its 23rd anniversary.

The company's present workforce is 5,800 employees and it is currently developing the 19-seat pusherprop transport CBA-123 Vector, the 50-seat regional fanjetliner EMB-145 and the military trainer Super Tucano.



Embraer just recently celebrated its 4,500th delivery of its EMB-120 Brasilia. The company celebrated its 23 year anniversary this year in August.

General aviation groups meet with FAA

EAA Press Release

Experimental Aircraft Association (EAA) President, Tom Poberezny, recognized Federal Aviation Administration (FAA) officials for their continued efforts to increase support for general aviation.

Poberezny and representatives of the nation's other leading general aviation organizations met with FAA Administrator Thomas Richards and Associate Administrator for Regulations and Certification Tony Broderick in early November to voice support for provisions of FAA's General Aviation Action Plan.

"We applaud FAA's continued willingness to include general and sport aviation groups as part of the process making aviation more accessible to those who wish to participate," Poberezny said. "With the number of critical issues facing general aviation it is more important than ever to keep the lines of communication with federal aviation officials open."

Poberezny cited the Small Airplane Certification Program introduced at the 1992 EAA Fly-In Convention in Oshkosh, Wis. as evidence of the renewed ability of the FAA, aviation organizations and aircraft manufacturers to work together.

"That program was a great step forward, proving that the three entities could cooperate to support general and sport aviation," Poberezny said. "The meeting between the leading aviation organizations in the nation and FAA continues to show that we are all determined to achieve the same goal - the expansion of safe aviation throughout the country."

Other organizations represented at the meeting included the National Business Aircraft Association (NBAA); Aircraft Owners and Pilots Association (AOPA); General Aviation Manufacturers Association (GAMA); National Air Transportation Association (NATA); National Association of State Aviation Officials (NASAO); Sport Aircraft Manufacturers Association (SAMA); and Helicopter Association International (HAI).

The group addressed a number of items relating to the General Aviation Action Plan and expressed particular interest in issues that could be addressed during 1993. Hopefully, progress will be made so that general aviation and sport aviation will again be able to grow. These efforts are very important, allowing more people to be able to become involved in aviation. Poberezny has put in a lot of time and effort in order to preserve sport and general aviation.

EAA hosts small aircraft certification compliance workshop

EAA Press Release

More than 50 representatives from the small aircraft industry, Experimental Aircraft Association (EAA), the Sport Aircraft Manufacturer Association (SAMA) and the Federal Aviation Administration (FAA) met at EAA Headquarters in Oshkosh, Wis. in Nov. to discuss the new Small Aircraft Certification Compliance Program.

Representatives of Canada's Ministry of Air Transport also attended.

The meeting standardized provisions of the program, which was introduced last July during the EAA Fly-In Convention in Oshkosh, for all FAA personnel around the country. Aircraft manufacturers and

FAA Aircraft Certification Offices (ACOs) were briefed on the program and how new small airplanes, engines and airframes could be certificated under the simplified regulations.

"This program has the worthy goal of making certification of new small aircraft, using today's technologies, less complex," EAA President Tom Poberezny said. "The ball is now in the aviation industry's court to produce engines and airplanes that take full advantage of this effort. This program will not be a success until we see airplanes come off the production lines and placed in the hands of the consumer. Only then will we have truly met our goal. The program was created to help the general aviation industry rebound from declining numbers in

single-engine aircraft manufacturing, new airplanes built and piloted, as well as the aging of the nation's current general aviation fleet.

The total number of airplanes registered in the United States has fallen by 10,000 since 1985.

The average age of an American piston-powered, single-engine airplane is between 25-28 years old.

The seriousness of the situation is underscored by the fact that only slightly more than 500 new single-engine small aircraft were manufactured by American companies in 1991, along with approximately 1,500 kit-built aircraft.

John Colony, Manager of the FAA Standards Office in the Small Airplane Directorate in Kansas City, Mo., foresees the program helping to revitalize and modernize the nation's

general aviation fleet.

"We want to go back to the future," Colony explained. "Much of the country's current general aviation fleet was certificated under rules established before 1965. We want to give small airplane manufacturers the opportunity to use modern technology to build safe, efficient aircraft."

Paul Fiduccia, Executive Director of the Sport Aircraft Manufacturers Association (SAMA) and leader of the EAA/Industry Team, hopes that airplanes produced under the program would reduce the product liability costs that prevent most general aviation manufacturer from producing small, single-engine airplanes because of the costs involved.

"The simplified design and

certification would help the liability problem," Fiduccia said. "If any problems are discovered, a manufacturer in this category would have the flexibility to fix it quickly. We would hope to reduce the liability factor by having safer airplanes and pilots who are trained better, so we never get to the lawyers."

It is hoped the first three aircraft and/or powerplants manufactured using the new compliance standards will be ready for certification in 1993. Fiduccia and Colony indicated that they did not believe President-elect Bill Clinton's administration would change the program.

The program was the product of more than two years of meetings between FAA officials, EAA, SAMA and a team of small airplane industry experts.

Lockheed celebrates 25 years of low speed wind tunnel testing

Lockheed Press Release

MARIETTA, Ga. — Lockheed Aeronautical Systems Company's Low Speed Wind Tunnel, billed as one of the largest privately-owned aerospace wind tunnels in the world, celebrates its 25th anniversary this year.

When the tunnel was designed and built in the late 1960s, it was intended for use in support of vertical and short take-off and landing (V/STOL) transport aircraft.

When the V/STOL projects did not materialize, the facility was focused on conventional aircraft development programs and non-aerospace test technologies.

The first test for the automotive industry was conducted in 1968 and with that test an extensive

commercial business opened which helped to establish Lockheed as a premier testing site.

The Low Speed Wind Tunnel is used for aerodynamic and loads testing of a variety of products, ranging from aerospace models of transports to advanced fighters, such as the F-22, to family cars, rail cars, satellites, exotic cars and even carpet backing.

In the past 25 years, we have completed more than 57,000 hours of wind tunnel testing for more than 70 commercial customers and 20 Lockheed programs.

This year the test load increased 50 percent over that of 1991 with the addition of new work created from the transfer of major Lockheed aircraft programs to Georgia.

The wind tunnel is powered by a 9,000 horsepower electric motor inside a round tubular portion of the tunnel.

The motor drives a six-bladed fan that is 39 feet in diameter and can produce winds up to 200 miles per hour.

It has a circuit center line length of 780.5 feet.

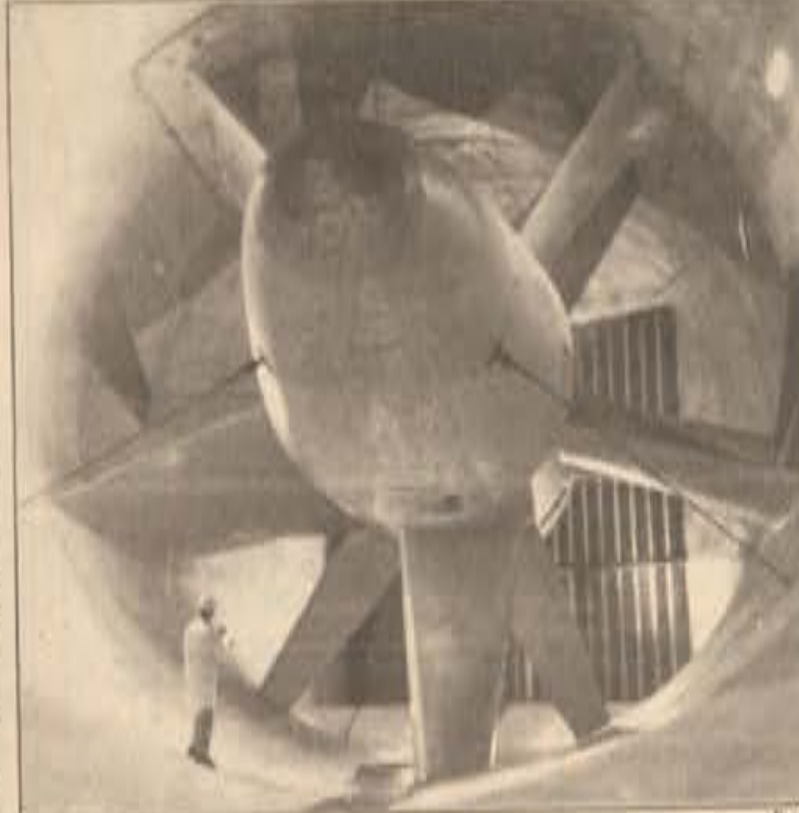
Wind generated inside recirculates continuously for energy efficiency.

The facility has been renovated and modernized over the years to incorporate new technology.

In 1985, the external balance measuring beams and electronics were updated, and the main drive motor control system was converted to a solid state slip recovery system.

Also, the main drive motor was rewound in 1990.

In the past few years new additions were included, such as electronic scanivalves which allow for a quicker read of data points, and a sting support system for high angle of attack model testing.



This wind tunnel put in 25 years of service for Lockheed and has been used in a variety of projects.

Mudry Aviation hosts grand opening of new facility

By Montaine Mallet

Mudry Aviation LTD. Press Release

Mudry Aviation LTD. and the French Connection Airshow gave a party, Friday, November 20 to celebrate the Grand Opening of their new 6,300 sq. ft hangar/school facility at the Flagler County Airport in Bunnell, FL.

Although the weather threatened to close in all day, skies broke just in time for the husband and wife team of Daniel Helgoin and Montaine Mallet to start the festivities with a private demonstration of their full airshow routine.

Afterwards, along with dinner, there were several presentations recognizing the help and support from the local community in the realization of Daniel and Montaine's long-time dream.

In attendance were several local county officials, as well as the Airport Manager and other airport business operators.

Eric Doten, of Embry-Riddle Aeronautical University, was recognized for his support as

Montaine announced that an elective credit tailwheel and aerobatic course for students at Embry-Riddle could be available on January 1, 1993. Students will commute from nearby Daytona Beach to receive training at Mudry Aviation in the J-3 Cub and the CAP 10B.

This is but one of the many ways Daniel and Montaine have planned to expand in the near future, since moving to Flagler County last March.

Since completion of their new facility on September 1, they have also planned to create a new "pure primary" flight training course in the J-3 Cub which will hopefully lead students to a recreational or private pilot certificate.

Further expansion of the aerobatic school is planned as well, with the training of additional instructors as the student load increases. Within the next year, Daniel and Montaine would also like to be able to expand on the level of service available to the owners of the various Mudry Aircraft such as the CAP 10B and World Aerobatic Champion Class CAP 231.

Mudry Aviation Ltd now offers a



Photo by Bryan Green

The CAP 10B, flown by the French Connection, are stock aircraft. The school will be offering tailwheel and aerobatic elective courses for ERAU students next semester.

They are also the distributors for the Avion's Mudry CAP 10B, CAP 231 and the new CAP 231EX.

For more information, call (904) 437-9700.

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Discovery set to lift off today as last shuttle flight of the year

By Arie Moller
Space Technology Reporter

This morning the Space Shuttle *Discovery* (STS-53) was scheduled to take off from launch pad 39A at 6:59 a.m. *Discovery* is scheduled for a seven day mission. The manifest for the flight includes a Department of Defense classified payload as the primary cargo, two secondary payloads and nine middeck experiments.

Discovery will be commanded by Captain David M. Walker (USN). Captain Walker has had a long history with NASA. He became an astronaut in August 1979. Assignments within NASA include Astronaut Safety Officer, Deputy Chief of Aircraft Operations, STS-1 chase pilot, software verification at the Shuttle Avionics Integration

Laboratory, mission support crew at Kennedy Space Center, and Space Station design and development. In addition, Walker has flown two previous shuttle missions, STS 51-A (*Discovery*) where Walker served as pilot, and STS-30 (*Atlantis*), where he served as mission commander. Walker has logged 289 hours of spaceflight time.

STS-53 is being piloted by Colonel Robert D. Cabana (USMC). Cabana was slated to become an astronaut in July of 1986. After training, Cabana served as Astronaut Office Space Shuttle Flight Software coordinator, Deputy Chief of Aircraft Flight Operations for the Johnson Space Center, and Lead Astronaut in the Shuttle Avionics Integration Laboratory. Cabana's only shuttle flight mission to date is STS-41 (*Discovery*), where he logged 98 hours of spaceflight time.

Colonel Guion S. Bluford (USAF) is serving as one of the mission specialist. Selected for astronaut duty in August of 1979, Bluford has the most spaceflight time of the STS-53 crew, having logged 513 hours in space. NASA experience includes working on the Remote Manipulator System, Spacelab 3 experiments, Space Shuttle systems, and verifying flight software in the Shuttle Avionics Integration Laboratory. Bluford has flown a total of three missions to date. The missions were STS-8 (*Challenger*), STS 61-A (*Challenger*), and STS-39 (*Discovery*). Bluford served as a mission specialist on all three flights.

The second mission specialist is Lt. Colonel James S. Voss (USA). Voss has been an astronaut since November of 1984. Experience includes Vehicle Integration Test Engineer for the shuttle, shuttle payload testing, participated in the investigation into the STS 51-L (*Challenger*) accident, and flight crew representative for shuttle safety. Voss has been on one previous mission, STS-44 (*Atlantis*), logging 166 hours in space.

The third mission specialist is Lt. Colonel Michael R. Clifford (USA). Clifford became an astronaut in July of 1991. NASA experience includes Space Shuttle Vehicle Integration Engineer, design work for the Shuttle Crew Escape System, and sat on the board for the Solid Rocket Booster Post Flight Assessment Team. STS-53 will be Clifford's first spaceflight.

Payloads
While the military payload is top secret, analyst John Pipe of the Federation of American Scientists believes it to be a Lacrose radar imaging satellite. This will be the last military mission for the Department of Defense. According to Air Force Lt. Col. James McLeroy of the Defense Department's Space Test Program, "It wasn't worth the cost considering how few military shuttle missions were planned." The cost to maintain secrecy per year was \$50 million. The military plans to use unmanned rocket boosters for future DoD missions.

STS-53's secondary payloads are the Orbital Debris Radar Calibration

Spheres (ODERACS), and the Shuttle Glow Experiment/Cryogenic Heat Pipe Experiment (GCP). ODERACS, developed by the Space Life Sciences Directorate of NASA's Johnson Spaceflight Center, will help NASA refine methods and systems for tracking orbital space debris. The experiment itself consists of two spheres for three different sizes. The two-inch spheres are made of solid stainless steel (1.17 lbs), the four-inch spheres are also made of stainless steel (9.36 lbs), and the six-inch spheres of solid aluminum (11 lbs). By tracking the objects as their orbits decay, scientists will better understand the dynamics involved.

GCP will measure and record the effects of electrically charged particles striking the tail of the orbiter. The experiment will also test the use of supercooled liquid oxygen for cooling of electronics on board the shuttle.

The cargo bay will carry nine small-scale experiments. The Battlefield Laser Acquisition Sensor Test (BLAST), will test the feasibility of using a satellite as a positioning uplink for ground based troops to a command post. Data will be displayed in real-time on the shuttle flight deck window as well as being recorded for the Department of Defense.

The Clouds Logic to Optimize Use of Defense Systems (CLOUDS) will simply be a photographic survey of cloud features. As the shuttle passes over a formation of interest, one of the astronauts will take a series of photographs of the formation. By analyzing the cloud cover as a function of the angle of the photo, meteorologists can predict cloud density from satellite photos.

The Cosmic Radiation Effects and Activation Monitor (CREAM) will collect data on cosmic ray levels in the middeck of the orbiter. The experiment was provided by the United Kingdom Defense Research Agency.

The Radiation Monitoring Equipment III (RME-III) is very similar to the CREAM experiment, but monitors the cosmic ray exposure that the astronauts experience.

The Fluid Acquisition and



The five astronauts assigned to fly aboard the Space Shuttle *Discovery* for the STS-53 mission pose for the customary crew portrait in the new Space Center Houston facility. Pictured are, left to right (front), Guion S. Bluford and James S. Voss, mission specialists; and (back row) David M. Walker, mission commander; Robert D. Cabana, pilot and Michael R.U. Clifford, mission specialist.

Resupply Equipment (FARE), will test the effects of microgravity on fluid flow. This experiment tests a device who's function is to transfer vapor-free liquids through shuttle systems. The device uses the surface tension of liquids to control flow through the tank.

The Hand-Held, Real Time, Cooperative, User-friendly, Location-targeting and Environmental System (HERCULES), is a modified camera that allows the user to point it at a feature on Earth, record the image and find its latitude

and longitude within two nautical miles. This project is a joint experiment by the Navy, Army and NASA.

The Microencapsulation In Space (MIS) experiment will test the theory that microcapsules made in space will be of superior quality to those made on Earth. Testing will use the antibiotic ampicillin. Microcapsules are used in everything from scratch and sniff stickers to long-release drugs.

The Space Tissue Loss (STL) record the image and find its latitude

see *Discovery*, page B8



Designed by the crewmembers, the STS-53 insignia shows the Space Shuttle *Discovery* rising to new achievements as it trails the symbol of the Astronaut office against a backdrop of the American flag. The five stars and three stripes also serve to symbolize the mission designation (STS-53) and America's continuing commitment of world leadership in space. The pentagonal shape of the patch represents the Department of Defense and its support of the space shuttle program. The band delineating the flag from space includes the four colors of the military services of the crewmembers.

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NASA takes space exploration to new heights in '92

Columbia, Discovery, Atlantis and Endeavour bring shuttle program back up to full speed

By Brian Gamage
Space Technology Reporter

The National Aeronautics and Space Administration (NASA) executed another series of successful space shuttle launches this year. Included in 1992's accomplishments were the maiden voyage of Endeavour, a spectacular satellite recovery, longer shuttle missions, a Noah's Ark-like crew of animals and the 13th flight of Columbia, the fleet's oldest shuttle.

The shuttle program successfully completed eight launches and landings using all four of the orbiters in 1992, the most ambitious flight schedule since the Challenger disaster in 1986 that halted space shuttle operations for almost three years.

The shuttle program began its permanent landing site transition in 1992.

The dry lake bed at Edwards Air Force Base (EAFB), which has been the primary landing site since the fleet's inception, was only used twice this year. Instead, six of the orbiters landed at the Shuttle Landing Facility (SLF) at Kennedy Space Center (KSC) and saved NASA approximately \$1 million each time.

Three of the shuttles in 1992 were new and improved versions of the originals, equipped with extended mission capabilities and drag chutes. Atlantis is currently undergoing the same overhaul modifications and should be readmitted to the active fleet some time next year.

1992 proved to be a very exciting year in space and 1993 will undoubtedly continue that excitement.

STS-42

The orbiter Discovery lifted off launch pad 39-A on January 22 and climbed to one of the highest inclinations ever, carrying Spacelab and the first female Canadian astronaut into space.

During the mission, the crew spent most of their time conducting non-stop space sickness experiments and Discovery landed a day later

"We're going to do whatever it takes to get the science,"

Astronaut David Hilmers said of the scientific research conducted on STS-42

than scheduled to allow more of the experiments to be performed.

One of the experiments involved astronauts sitting in a rotating chair while their legs were zapped with an electrical impulse. The data collected helped scientists better understand how the body is affected by weightlessness.

STS-42 was commanded by Ronald J. Grabe and piloted by Stephen S. Oswald. Mission specialists were David C. Hilmers, Norman E. Thagard, William F. Readdy, Ulf D. Merbold and Roberta L. Bondar.

Discovery landed on concrete runway 22, EAFB after a flight duration of eight days, one hour and 14 minutes.

STS-45

The Space Shuttle Atlantis launched from pad 39-A on Tuesday, March 24 after a 24-hour delay, carrying the Atmosphere Laboratory for Applications and Science (ATLAS) and rookie pilot Brian Duffy into Earth orbit.

ATLAS was part of NASA's first phase in Mission to Planet Earth, a program that will study how the atmosphere reacts to natural and human-related changes. The shuttle also carried 12 instruments from seven countries that conducted 13 experiments on the atmosphere, solar radiation and space plasma physics.

Commander for STS-45 was Charles F. Bolden and Brian Duffy was the pilot. Mission specialists were David C. Leestma, C. Michael Poole, Dirk D. Frimout and Byron K. Lichtenberg.

Atlantis landed on runway 33 at KSC after an eight day, 22 hour and nine minute mission.

STS-49

Endeavour, the newest shuttle to enter the country's fleet of space vehicles, was launched from KSC on May 7 of this year, restoring NASA to full flight capacity. Endeavour was ordered to replace Challenger, and its first mission involved the rescue of a satellite, a fitting tribute to the lost Challenger crew.

Endeavour rendezvoused with the Intelsat satellite at an orbital height of 225 miles allowing astronauts Richard Hieb and Pierre Thuot to attempt the rescue. Unfortunately, Thuot failed his first attempt to attach a capture bar to the satellite, causing it to wobble.

Failures continued for two more days, then on the fifth flight day, the crew made space history when three astronauts exited the air lock and rescued the satellite together. STS-49 was a mission of firsts. It was the first time a satellite was captured by hand, the first three person spacewalk, and the first time a shuttle landing was assisted by a drag chute.

Daniel C. Brandenstein was the commander on STS-49 and the mission was piloted by Kevin P. Chilton. The list of mission specialists were Pierre J. Thuot, Kathryn C. Thornton, Richard J. Hieb, Thomas D. Akers and Bruce E. Melnick.

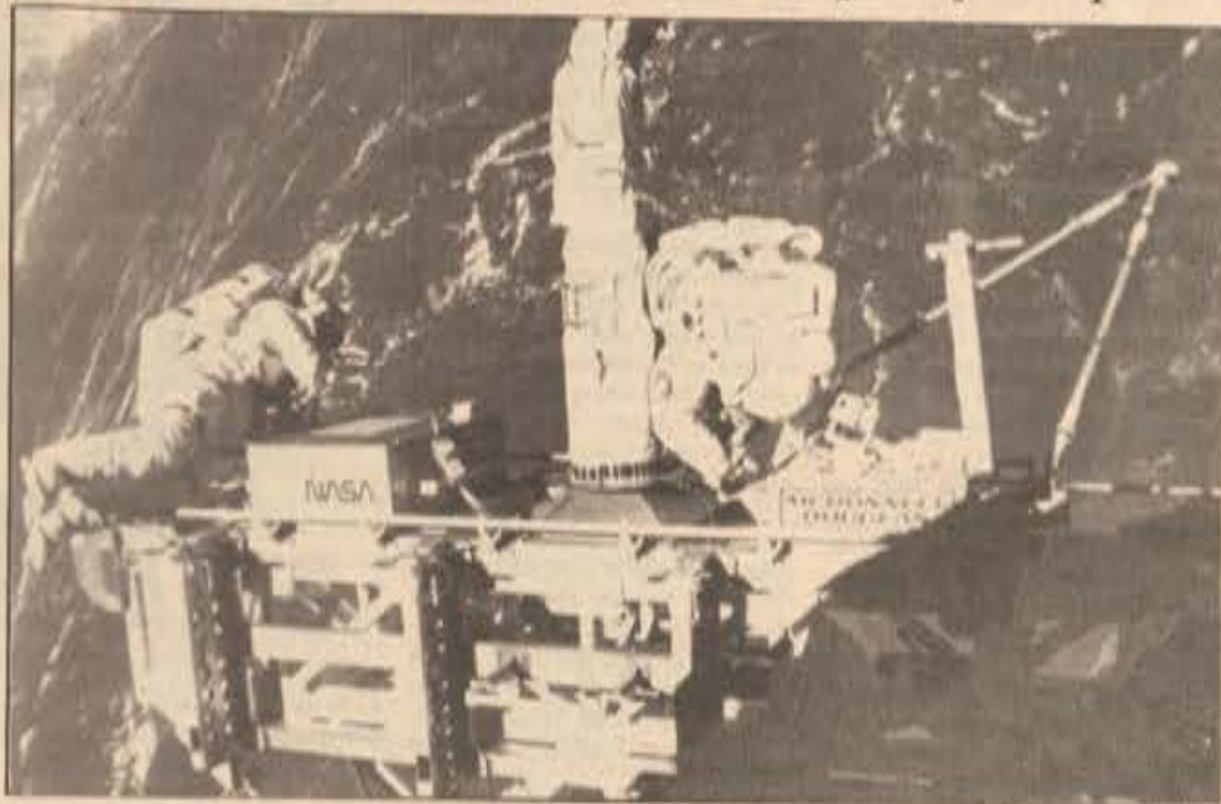
Endeavour landed at EAFB after an exciting mission lasting eight days, 21 hours and 17 minutes.

STS-50

Space Shuttle Columbia launched from Cape Canaveral, Florida on June 25, carrying a payload of scientific experiments and an amateur radio experiment. The zero-gravity

"Houston, I think we got a satellite."

Commander Dan Brandenstein after the successful rendezvous with the Intelsat satellite during STS-49



Astronaut Kathryn Thornton (left) and Thomas Akers are seen on the STS-49 mission's fourth period of extravehicular activity (EVA) as they work with components of the Assembly of Station by EVA Methods evaluation.

environment provided Columbia with an interesting testbed for valuable scientific investigations.

The United States Microgravity Laboratory performed 13 experiments ranging from manufacturing crystals to observing the behavior of weightless fluids. STS-50 was the first extended duration mission, which enabled the crew to conduct more experiments in the microgravity environment.

The extension also allowed the crew to contact more ham radio operators around the world, part of NASA's public contact and awareness program.

STS-50 was commanded by Richard N. Richards and piloted by Kenneth D. Bowersox. Payload commander was Bonnie J. Dunbar. Mission specialists were Ellen S. Baker, Carl J. Meade, Lawrence J. DeLuca and Eugene H. Trinh.

Columbia landed on Runway 33 at KSC after a 13 day, 19 hour and 30 minute mission, which was the longest shuttle mission to date.

STS-46

Atlantis lifted off pad 39-B on July 31, after a short delay, carrying the Italian Space Agency's Tethered Satellite, the European Space Agency's EURECA scientific satellite and an experiment platform.

The mission was not without its problems. The EURECA satellite, which is scheduled to be rescued on STS-57 in 1993, failed to enter the proper orbit and the Tethered Satellite System (TSS) experienced an almost complete failure.

A small bolt protruding into the tether reel housing prevented the satellite from being fully deployed. The bolt was an embarrassment for designers who extraneously added it to provide more support for launch without checking if the modification conflicted with the operation of the reel.

The extended satellite was supposed to produce 5,000 volts of electricity and provide researchers with

valuable data for a possible power source for Space Station Freedom, as well as other uses.

Commander of STS-46 was Loren J. Shriver and the pilot was Andrew M. Allen. Payload commander was Jeffrey A. Hoffman and mission specialists were Franklin R. Chang-Diaz, Claude Nicollier, Marsha S. Ivins and Dr. Franco Maierbo.

Atlantis landed on KSC's Runway 33 after a mission lasting seven days, 23 hours and 16 minutes.

STS-47

The Space Shuttle Endeavour started its second flight on September 12, marking the 50th time the Space Transportation System launched into Earth orbit. Endeavour carried the Spacelab-J and a special Getaway Special Experiment platform.

This was also the first time a shuttle lifted off exactly on time since November, 1985.

The mission was dedicated to Japan's space science experimentation, which was conducted on the Spacelab-J module, a laboratory designed to simulate how astronauts will work on Space Station Freedom. The unusual experiments involved studying how frog eggs develop in zero-gravity, how hornets build nests without the guidance of gravity and how Japanese carp, chicken embryos and fruit flies react to weightlessness.

In command of STS-47 was Robert L. Gibson and the pilot was Curtis L. Brown, Jr. Payload specialist was Mamoru Mohri and mission specialists were Mark C. Lee,

"I got to tell you, this is a great way to commute to work."

Astronaut Jay Apt radioing mission control after reaching orbit on STS-47

Jerome Apt, N. Jan Davis and Dr. Mae C. Jemison.

Endeavour landed at KSC after a seven day, 22 hour and 31 minute mission.

STS-52

Columbia lifted off launch pad 39-B on October 22, after nearly a two hour delay, carrying the LAGEOS satellite, the United States Microgravity Payload (USMP) and the Canadian-run CANEX-2.

STS-52 was Columbia's 13th flight into space, the second time USMP flew on a shuttle and the third time a Canadian astronaut joined a shuttle crew. The LAGEOS satellite will be used to laser range the changes in the Earth's crust, which will help scientists understand the science of plate tectonics.

Canadian payload specialist Steven MacLean performed experiments with the Remote Manipulator System, which will help in the implementing of procedures for Canada's contribution to Space Station Freedom.

Commander of STS-52 was James D. Wetherbee and pilot was Michael A. Baker. Canadian payload specialist was Steven MacLean and mission specialists were William M. Sheperd, Tamara E. Jernigan and Charles Lacy Veach.

Columbia landed on Runway 33 at KSC after a nine day, 20 hour and 56 minute mission.

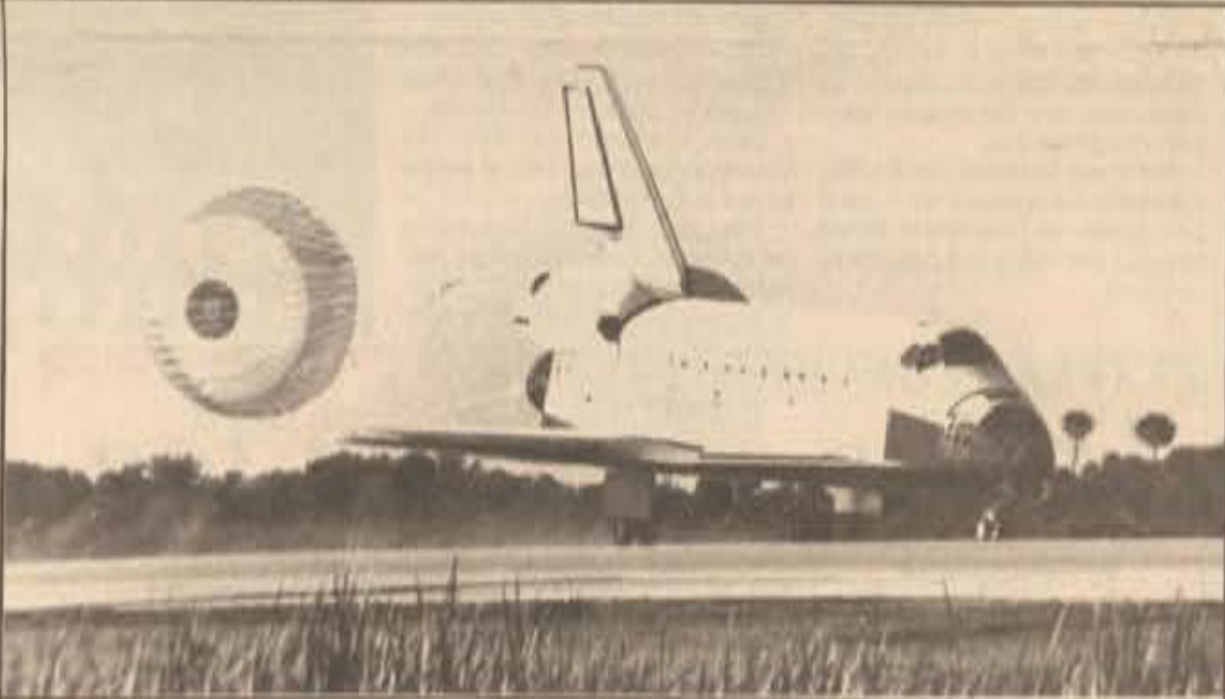
STS-53

The Space Shuttle Discovery is scheduled to launch today on its 15th flight into orbit.

Discovery is commanded by David M. Walker, piloted by Robert D. Cabana, and the mission specialists are Quion S. Bluford, James S. Voss and Michael Richard Clifford.

This will be the last space shuttle flight of the year and the 10th and final flight for the Department of Defense, which will now use unmanned rockets for its payloads.

see related story on page B2



The Space Shuttle Endeavour returned to the Kennedy Space Center on September 20 to end STS-47 and the 50th space shuttle flight. Endeavour was the first shuttle outfitted with a drag chute to assist in landing.

1993 Space Shuttle Launch Manifest

Flight:	Launch Date:	Orbiter:	Duration: Landing:	Primary Payload:	Crew:
STS-54	January	Endeavour	6 days KSC	Tracking and Data Relay Satellite (TDRS-06)	John H. Casper; Donald R. McMonagle; Gregory J. Harbaugh; Mario Runco; Susan J. Helms
STS-55	February	Columbia	9 days KSC	Second German Spacelab mission	Steve Nagel; Tom Henricks; Jerry L. Ross; Charles Precourt; Bernard A. Harris Jr.; Hans Schlegel; Ulrich Walter
STS-56	March	Discovery	8 days KSC	X-ray astronomy experiments on freeflyer	Kenneth Cameron; Stephen S. Oswald; Kenneth D. Cockrell; Michael Poale; Ellen Ochca
STS-57	April/May	Endeavour	7 days KSC	EURECA retrieval Spacehab-01	Ronald J. Grabe; Brian J. Duffy; G. David Low; Janice E. Voss; Nancy J. Sherlock; Peter J.K. Wisoff
STS-51	June/July	Discovery	9 days KSC	Advanced Communications Technology Satellites	Frank L. Culbertson Jr.; William F. Readdy; Daniel W. Bursch; James H. Newman; Carl E. Walz
STS-58	August/September	Columbia	13 days EAFB	Spacelab Life Sciences-2	John Blaha; Richard Searfoss; Rhea Seddon; Shannon Lucid; Bill McArthur Jr.; David Wolf
STS-60	November	Discovery	7 days KSC	Spacelab-2, Wake Shield Facility-01	To Be Determined US/Russian crew exchange flight
STS-61	December	Endeavour	8 days KSC	Hubble Space Telescope optical correction	Story Musgrave; Tom Akers; Jeffrey A. Hoffman; Kathryn C. Thornton, Commander/pilot To Be Determined

Some notes on this schedule: This is an unofficial space shuttle launch schedule covering the period of January 1993 through December 1993. Crew listings name commanders first, then pilots, then mission and payload specialists. Official launch dates are set at the Flight Readiness Review.



Aligned straight on with the approach lights, the Space Shuttle Columbia glides toward Runway 33 of the Kennedy Space Center's Shuttle Landing Facility to complete the STS-52 mission last month. In all, five flights ended at the Shuttle Landing Facility, located less than five miles from the sea side launch pads.

Four books were released with "Dracula"

By Boyd Kelly
Diversions Editor

Well, I promised to tell you all about the neat books that were being released in conjunction with Francis Ford Coppola's *Dracula*, so, here goes.

The first and foremost book, is the companion to the movie. Newmarket press released *Bram Stoker's Dracula: The Film and The Legend*. This is a good book if you liked the movie.

It includes the entire screenplay, as written by James V. Hart (Hook), many pictures and a whole bunch of other neat stuff.

There is an introduction from Coppola and Hart and an afterward by Gothicist Leonard Wolf.

Wolf is the author of *A Dream of Dracula* and *The Annotated Dracula*.

He has his own theory on the story, "Readers and filmgoers recognize that *Dracula* is attractive precisely because he represents the dark side of our own nature. We live in an age that admires energy and power and we know more about erotic fantasies than may be good for us. No wonder we are glad to see him stopped in film—and forever."

There is a short history of Bram Stoker's life in the beginning. This is an important piece for history buffs and proves to those non-believers that they really did follow the original story.

In addition to stoker's life, the book is interspersed with outtakes from his original novel and his own personal notes.

The entire screenplay is included with angels and shots and even Coppola's personal notes. There are over 160 photos, paintings, and drawings—with 100 of them in full vivid color.

There is also a lot of information on the films production and sets. For instance, they used 6 soundstages to create 58 separate sets. All the special effects were done the old-fashioned way and without computers. Coppola's son, Roman, was in



The Newmarket Press companion book to "Bram Stokers Dracula."

charge of the visual effects unit. It also explains Coppola's use of electronic editing and how he edited the movie while it was being filmed.

James Hart explains in his introduction why he did *Dracula* again: "My response was always the same: because the real *Dracula* has never been done. Anyone who has read Bram Stoker's brilliant, erotic, Gothic novel can understand that my answer was not meant to be arrogant, but rather reverent of Stoker's literary classic."

Both Coppola and Hart had a long fascination with the subject. Hart started this screenplay in 1977. Coppola remembers reading the novel out loud to students when he was a drama camp counselor he says: "I remember as a kid going to the Encyclopedia Britannica to look up *Dracula*—and there he was, Vlad the Impaler. I read about this fiery guy, how he literally stopped the Turks by impaling his own people

with stakes, and I was just thrilled to think he really existed.

For a lighter fare, Signet/Penguin USA will re-release the original Bram Stoker novel with a new cover and an 8 page photo inset.

Signet will also publish *Bram Stoker's Dracula: The Novel of the Film Directed by Francis Ford Coppola*. This novel is written by Fred Saberhagen and James V. Hart and is based on Harts screenplay.

The fourth book should be a real treat if you like fancy costumes and clothing. *Coppola and Eiko on Bram Stoker's Dracula* is written by Francis Ford Coppola and Eiko Ishioka.

Eiko Ishioka was the films costumes designer and did an excellent job of living up to Coppola's declaration that, "The costumes will be the set." The book focuses on the costumes for the movie.

So, if you haven't already had enough of vampires, treat yourself for Christmas.

Neil Young revitalizes his old style with his latest album *Harvest Moon*

By James D. Krueger
Diversions Writer

In the new age of raging electric guitars, shrilling high voices and even rap music, it's a relief that one of the originators of classic rock is still putting out the same kind of music that ensnared the hearts of millions over generations.

This album is mainly filled with the eclectic voice of Young, a smooth acoustic guitar, and his characteristic harmonica.

Neil's music on *Harvest Moon* takes me back to an era where the lyrics were the cornerstone for a great song. It reminds me of *Harvest* more than any other album that he has recorded.

"*War of Man*" is destined to reach classic status but as with any Neil Young album there is always much more than one good song. In the third song "You and Me", Neil makes references of comparison about the present and past.

"I was thinking of you and me

Making love beneath the tree
And now I wonder could it be
Thinkin' 'bout the times we had
Some were good and some were bad

Guitar fightin' the TV"
Neil's comparing the relationship he has with his music to that of a traditional man-woman alliance. He puts in a necessary evil such as the TV to pose as a catalyst and then ultimately a scapegoat for difficult times.

"Lookin' at you just the other night

Dancin' in the evening light True love conquers all

Old man sittin' there
Touch of grey, but he don't care
When he hears his children call"

In this verse it would seem that Neil has an emotional and even a paternal connection to modern music in general.

He sees himself getting older but not only does this not bother him, it elevates his self-esteem because he can see and feel a little Neil Young

in a vast majority of the music recorded today.

Harvest Moon is already a treasured member of my collection of music. From the subtleness of "One of These Days" and "Natural Beauty" to the off beat "Old King," a personal connection to the theme of each song is an easy task.

I would recommend this album to anyone, especially if you are a CSN&Y, Buffalo Springfield, or Neil Young fan, and remember, don't just listen, feel the music.

I was thinking of you and me
Making love beneath the tree
And now I wonder could it be
Thinkin' 'bout the times we had
Some were good and some were bad

George Thorogood releases a brand new "baddest" compilation album

By ME SENN
Diversions Writer

The Baddest Of, a very appropriate title for George Thorogood and the Destroyers' new EMI album, is a surefire fanpleaser.

This excellent compilation of his "baddest" hits includes such favorites as: "I Drink Alone," "Gear Jammer," "You Talk too Much" (about that mouthier type girlfriend), "Move It On Over" (The I'm stuck in the dog house... again, song) and "Who Do You Love" (I gotta Cobra snake for a neck tie).

Also included is the all time favorite of Thorogood fans, "Bad To The Bone," featured in *Terminator II*, *Risky Business*, and *Christine*. "Baddest Of" would not be complete without that ballad of the I'm

recently unemployed, girlfriend just left me, I guess I'll start drinking heavily song... "One Bourbon, One Scotch, One Beer."

Influenced by the Stones (who hasn't been?), the J. Geils band, and by Chuck Berry, George Thorogood and the Destroyers (Steve Chrismar, Bill Blough, Jeff Simon, and Hank Carter) take their very distinctive style to the stage with a roar, making for quite a jam-boree.

If you've ever seen them on stage, you'll love this album, it'll bring back some good memories.

If you've never seen them live, this album does great justice to capturing the energy of George Thorogood and the Destroyers, from early originals up to two previously unreleased cuts: "I'm A Steady

Rollin' Man," and "Louie To Frisco."

These two are remakes originally by Robert Johnson and Chuck Berry, respectively.

"If You Don't Start Drinkin' (I'm gonna leave)," "Treat Her Right" and "Long Gone" are some more jamboree with George hits, finishing up the *Baddest Of* list.

When you find yourself just a little too content to kick back and play the air guitar, *The Baddest of George Thorogood and the Destroyers* will add the face contorting slide you're hurting for.

If you've ever seen them on stage, you'll love this album, it'll bring back some good memories.

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"To Hell With Love" says Suzanne Rhatigan

By Douglas O. Fisher
Diversions Writer

To Hell with Love, Suzanne Rhatigan's debut album, was released this summer by the ima'go recording company.

It was more than the good looking woman on the cover that compelled me to get this album. It was the title, the expression on Suzanne's face and the way she is within arms reach of the carving knife that made me think maybe she possesses the same attitudes about love that I do.

After listening to this rockin' blues album, there was no doubt about it, she's as fed up with men as I am with women.

To Hell With Love is better than the standard "My baby left me, my hearts broken," type blues. It's "I sent the bastard packing, get out of my face," blues.

One thing is for sure, this 30 year old Irish female knows how to sing the blues of the true horrors and splendors of relationships.

I've been told that in order to sing the blues, you must live the blues. According to her biography, Suzanne did live the blues as she was growing up. Actually, she says her life is a series of misunderstandings.

Suzanne has an incredible voice and possesses the ability to go from

a shout-like scream to a seductive whisper all in the same song.

The title song, *To Hell With Love*, is a blues rock song with a cool groove to it. The lyrics are great... "Get out of my face, boy I'm telling you. Don't leave a trace of the smell of you." The lyrics are to the point, no soft stepping around.

"Open Up," is a classy song about seduction where both parties are seduced.

"The Further We Go," is a song about keeping things from one another. "Never will we discover the truth about each other, if we keep it undercover, the further we go." Suzanne really makes the most out of her seductive whisper singing voice during this song.

"Nearly 18," is a catchy tune about leaving home for the first time.

"Indian Summer," is another song that hits close to home. "Don't say goodbye, just turn around and walk away. Just leave me to remember the times we spent together in that indian summer." In this beautiful song Suzanne is saying: Hey, it's over, I just want to remember the good times.

"Daddy," is an "I want to come home" type of song.

Suzanne has a beautiful voice. I wish I could have seen her on stage, because she does an excellent cover



By Jones

Don't let the pretty face fool you, Suzanne Rhatigan can sing the blues with real power.

of "Crosstown Traffic," one of my all time favorite songs. Maybe it will be on her second album.

I not only liked the album, I can relate to it.

Elianne Haalberberg, who I think

is one of the best rock n' roll reviewers, had this to say: "Been wronged/cheated/ lied to/ manipulated/ deceived/ burned lately? Spend Friday night with *To Hell With Love* and rest assured you're not alone."

Stone Temple Pilots present a "Maximum Rock and Roll" experience with their new album "Core"

By Douglas O. Fisher
Diversions Writer

The full page ad said, "Maximum Rock and Roll," so naturally I had to inquire about obtaining a copy.

I'm glad I did, because *Core*, the debut album from Stone Temple Pilots, on Atlantic records, really rocks.

Coming from the San Diego California area STP is comprised of Weiland on vocals, Robert DeLeo on bass, Dean DeLeo on guitar and Eric Kretz on drums.

Weiland brings the powerful lyrics of the music to the listeners in a variety of singing styles, showing his ability to treat the voice "Like an instrument as opposed to a single sound."

The stereo effects enhance the heavy rock sounds of this debut.

Core handles repeated listening very well.

In fact, after a couple of listenings, an overall message of "Hey People, Wake up, Look what's going on around you," starts to

develop.

"Dead and Bloated," is a real good rocker filled with lyrics and has a killer beat to it.

"Sex Type Thing," is about "A typical american macho jerk with a totally unoriginal attitude about women." I said I wanna get next to you, I said I'm gonna get close to you, you wouldn't want me to have to hurt you to.

I know you know whats on my mind." The guy knows the meaning of the word "No," he just doesn't care. "Wicked Garden," has a classic

short chop rock guitar style to it along with a lot of cool studio effects.

"Naked Sunday," is an upbeat angst ridden song, while "Creep," is an acoustical song where Weiland's voice is clean and clear. "Plush," is an uptempo and melodic rocker with hidden meaning lurking in the lyrics. "Crackerman," is a real burner with cool studio vocal effects.

This song sounds great in a room which enhances a true stereo sound. All in all, *Core* is a collection of 12 songs worth checking out.

Life after GN'R for Izzy

By Douglas O. Fisher
Diversions Writer

Izzy Stradlin and The Ju Ju Hounds, released by Geffen Records, shows that there is life and music after GNR for Izzy Stradlin.

Teaming up with Rick Richards on guitar, Jimmy Ashurst on bass, Charlie "Chalo" Quintana on drums, and a host of other guests, an album of different rock styles was recorded.

"Somebody Knockin'," is just that, somebody knocking at my door. All kinds of people. This song has a cool guitar riff to it.

"Pressure Drop," is one of Izzy's favorite reggae songs, so instead of screwing it up they changed it to a fast rocker but left a little of the original at the end.

"Shuffle It All," has a cool bass riff and a good lead guitar spot. It is a rock song about moving around all the time and never settling down. Kind of like living out of a suitcase all the time.

"Bucket O' Trouble," is a screamer with a punkish edge to it, while "Train Tracks," is about Izzy's high-school hangout spot by the railroad tracks. This song features some real good slide guitar spots.

"How Will it Go," is a little bit of a slower song about change that you can actually feel.

"Cuttin' the Rug," is a real cool song with good guitar leads. The song is about the music scene where everybody is cuttin' the rug. "A fun song about loosening up."

"Take a look at the Guy," is from Ronnie woods' solo album and he even performs during parts of this cover.

"Come on Now Inside," finishes up this debut. It's a soft song with a piano playing throughout. The song is about wintertime in Indiana. A time when the land is both cold and dark.

The different styles of rock contained in this debut are worth checking out.

DECEMBER

Campus Paperback Bestsellers

1. The Inexpensive Calvin and Hobbes, by Bill Watterson (Andrews & McMeel, \$12.95) Latest collected cartoons
2. Life's Little Instruction Book, by H. Jackson Brown Jr. (Putnam, \$5.95) Advice for attaining a full life
3. The Firm, by John Grisham (Doubleday, \$5.99) Young lawyer confronts the hidden workings of his firm
4. Live and Let Me and Pass It On, by H. Jackson Brown Jr. (Putnam, \$5.95) 500 tips to achieve a full life
5. Seven Habits of Highly Effective People, by Steven R. Covey (Freeze, \$9.95) Guide to personal betterment
6. Saint Maybe, by Anne Tyler (Dj, \$5.99) Struggles of a young man to come to terms with his past
7. United We Stand, by Ross Perot (Hyperion, \$4.95) Troubles on New America can be solved
8. A Time to Kill, by John Grisham (Doubleday, \$5.99) Pretrial lawyer runs high during a trial
9. The Sun of All Pears, by Tom Clancy (Bantam, \$5.99) Middle Eastern terrorists bring about the threat of nuclear war
10. A Thousand Acres, by Jane Smiley (Fawcett, \$12.00) Saga of a midwestern family that runs a large industrialized farm

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New & Recommended


- Med II, by Don DeLillo (Penguin, \$11.00) Daring novel about words, images, revolution, terrorists, the mass media and the arch-individualist.
- Almanac of the Dead, by Leslie Marmon Silko (Penguin, \$13.00) A moral history of the Americas told from the point of view of the conquered, not the conquerors. The many-layered narrative tells of the magnificent and tragic story of the clash of two civilizations.
- The Scramble for Africa, by Thomas Pakenham (Avon, \$16.00) Sweeping history of the European conquest of the dark continent from 1875 to 1912 bringing to life a remarkable tableau of explorers, politicians, merchants, military men and heroes.

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