

The Astrogram

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Jupiter's tail believed enormous

Pioneer 10 sensors have indicated that Jupiter has an enormous magnetic tail, almost half a billion miles long, completely spanning the distance between the orbits of Jupiter and Saturn.

Pioneer 10 is on its way out of the solar system and crossed the orbit of Saturn in early February. Spacecraft sampling data shows that Pioneer was solidly in Jupiter's tail for at least 24 hr in mid-March. For 5-hr periods before and after the apparent encounter with the tail, the spacecraft was not programmed to return tracking data and may have been partially in the tail's influence, says Pioneer project scientist Dr. John Wolfe.

During the 24 hr in the tail, the spacecraft's solar wind instrument registered zero because the tail's magnetic envelope structure shut out the solar wind completely. Calculations show that Pioneer was in the proper position to intercept the tail, about 1 deg to the right of the Sun-Jupiter line. This bias is due to Jupiter's orbital velocity.

"It is just barely conceivable that the solar wind could have died completely for a whole day without our being in the tail, and we'll know more when we have complete tracking data," Dr. Wolfe said, "but we believe we've found that Jupiter has a very stretched-out magnetic envelope or tail" (see drawing).

Scientists had speculated that Pioneer might be in a "magnetic bubble" broken off from the tail, but Wolfe now believes that because of the long time of zero solar wind, Jupiter has an intact tail stretching all the way from Jupiter to Saturn.

"The cylindrical tail may expand as it goes out," Wolfe says. "It may be even larger than the nine-million-mile diameter of Jupiter's magnetic envelope at the planet because the solar wind density is down four times by the time you're out to Saturn's orbit," he says. (Continued on Page 5)

New EEO counselors

Center Director Dr. Hans Mark has selected the following personnel as new counselors: Bea Morales, Audrey Summers, Pat Kirk, and Henry Mack.

The new counselors will take over the counseling duties previously performed by Sheldon M. Smith, Lewis A. Turner, Dorothy M. Davenport, and Allison Ybarra.

Equal Employment Opportunity counselors serve as a bridge between employees and management and have the responsibility for establishing an open and sympathetic channel through which employees may raise questions, discuss grievances, obtain answers, and, on an informal basis, resolve problems connected with equal employment opportunity. The counselor's role is an integral part of the total EEO Program, and it is essential that the role of the counselor is understood and supported by all Center personnel at all levels.

Mars atmosphere study scheduled for Viking



After an 11-month journey through 736 million kilometers (460 million mi) of space, the Viking Lander will have just 5 minutes to profile and analyze the Martian lower atmosphere.

Developed at Ames Research Center, the Lower Atmosphere Structure Experiment will produce a profile of the temperature, pressure, and density of the last 100 km (60 mi) of the atmosphere as the Lander rapidly decelerates from about 4,500 m/sec (10,000 mph) to a gentle 3 m/sec (6 mph) touchdown on Mars, July 4 at 9:41 p.m. EDT.

The experiment is one of three separate investigations prepared by members of the Viking Entry Science Team. The other investigations will analyze the composition of the gases of the upper atmosphere and measure ion and electron energy during Mars entry to determine ion type and concentration.

Alvin Seiff, lead investigator of the Lower Atmosphere Structure Experiment, Ames Space Science Division, expects the study to solve some puzzles about Martian winds and atmospheric temperature and pressure.

Ninety m/s (200 mph) winds appear to cause periodic planet-wide dust storms on Mars, but present knowledge, based on numerical models rather than direct measurements, doesn't predict winds of that intensity. Horizontal wind velocity measurements and atmospheric temperature readings at different altitudes will help explain wind dynamics.

Seiff feels that besides answering basic questions about the Martian atmosphere, the investigation will broaden our view of our own atmosphere. After the Viking mission, scientists may better understand the

circulation of the Earth's atmosphere, which determines our weather and the behavior of our polar caps, which mark the coming and going of the ice ages with their growth and recession.

Mars' polar caps grow and recede seasonally as they condense and evaporate carbon dioxide.

An accelerometer on the Lander will measure the craft's rate of deceleration through the Martian atmosphere. Scientists can determine the density of the atmosphere from the Lander's size, shape and weight and its deceleration rate. Data from tests of Lander models fired through carbon dioxide atmospheres in Ames ballistic ranges are used to calibrate this measurement.

Atmospheric pressure and temperature can be derived mathematically from the density. During the descent from 100 km (60 mi) to 25 km (15 mi), the density, pressure, and temperature profiles will all be derived from the accelerometer measurements.

As the Lander falls to within 25 km (15 mi) of Mars, direct sensing of temperature and pressure will begin. The aeroshell stagnation pressure instrument and the recovery temperature instrument on the Lander's aeroshell continually sample the air as the Lander races down through the Martian atmosphere.

The pressure instrument contains a thin diaphragm that bends with increasing pressure. The movement converts the pressure into an electrical signal much like the function of a microphone diaphragm.

During the final 6 km (200,000 ft) of the Lander's descent, the aeroshell is cast off and the (Continued on Page 3)

Jetsetters news

Beginning May 1, the Ames Jet Setters are offering employees a new program through California Host. This will be a continuing program as long as interest is shown in it. There will be no individual publications of notices; all planned events will be published in the Astrogram on a continuing basis and individual trip descriptions will be posted on the building bulletin boards as the events are offered. A separate page "Request for Expression of Interest" is included with this copy of the Astrogram so that only trips of interest to the employees will be considered. Please circle 12 events listed in which you would participate and return the questionnaire to M/S 206-3.

This program is offered to all persons employed at Ames, retirees from Ames, and their friends.

A California Host escort will be on board all motorcoaches. Transportation will be provided from Moffett Field to destination and return to Moffett Field. All prices quoted are per person, double occupancy. Reservations/payment must be received not later than two (2) weeks prior to the announced trip. Payment must be sent to Marian Davis, Room 102, Bldg. 206 (M/S 206-3 - Ext. 5832). All checks must be made payable to the NASA-Ames Jetsetters.

To get the program started, the following trips are offered:

- 21-23 May - SOUTHWEST, LAKE TAHOE - Price \$41. Includes motor transportation, two nights accommodations, \$17 value refund, complimentary wine. Cut-off date - 6 May 1976.
- 19-20 June - MENDOCINO AND THE SKUNK TRAIN - Price \$39. Includes motorcoach transportation, one night accommodations, Skunk Train ride, complimentary wine. Cut off date - 3 June 1976.
- 2-7 July 1976 - BICENTENNIAL Boston, New York, Philadelphia, Washington DC
- 22 Oct - 7 Nov 1976 - HONG KONG (Contact Guy Wong at Ext. 6022)

Jetsetters request expression of interest

JET SETTERS REQUEST EXPRESSION OF INTEREST

All employees are requested to indicate which of the programs listed below are of interest to them and in which they would participate. Every effort will be made to include these programs in the Jet Setters itinerary for the oncoming months.

Please circle *only 12 of the programs* in which you have interest and return this questionnaire to Mail Stop 206-3.

Gambling Trips

- Tahoe
- Keno
- Las Vegas

Professional Sports - Games

- Football
- Basketball
- Hockey
- Soccer
- Tennis Tournaments
- Golf Tournaments
- Crosby Tournament (Jan)
- Deep Sea Fishing
- Sailing - 36' Sloop on Bay
- Canoe Trips on Russian River

Musical Events

- Opera
- Musical Productions
- Stage Plays
- Monterey Jazz Festival
- Mozart Festival
- Carmel Bach Festival
- San Francisco Nitelife Tour
- Concerts

One Day Outings

- Victorian House Tour
- Adobe House Tour in Monterey
- Dicken's Faire - San Francisco
- Horse Races
- Napa Valley Wine Country
- Sausalito - Tiburon
- Art Festivals
- Dinner Cruises
- Antique Shows
- Hobby Shows

Get-Away Weekends

- San Simeon - Hearst Castle
- Solvang - Danish Community
- Mendocino Coast - Skunk Train
- Monterey - Carmel
- Yosemite
- Tahoe Snow Trip
- Ski Trips
- Pajaro Dunes
- Palm Springs
- Catalina
- Historical Tours

Exploring Weekends

- Gold Country
- Art Galleries - Carmel
- Redwoods
- Desert
- Mission Tours

Club House Activities

- Bridge Parties - Weekly? - Special?
- Guest Speakers
- Wine Tasting
- Brunches
- Dinners - Potlucks
- Holiday Get-togethers

Number of Trips per Month Desired: One Two

These programs are offered by California Host. They have escorts, serve wine, can arrange special events, and can offer discount rates to all events.

Hong Kong

A 16-day trip to Hong Kong with optional side trips is being offered on October 22, 1976 at a cost of \$699. A slide presentation on the highlights of the trip will be shown in Building 213, Conference Room (Room 261) at 11:30 a.m., Tuesday, May 4, 1976 by Guy Wong. Reservations may be made by contacting Guy Wong at his office 322-7612. A deposit of \$100 per person must be received by him not later than May 25, 1976 for those desiring to make the trip and to confirm reservations.

Travel insurance

Here is protection when you are traveling, whether it's to and from work, on shopping trips, running crosstown errands, chaffering the kids to school, vacationing, or taking business trips (local or world-wide, depending on plan selected).

BENEFITS AND COST

(Employee chooses the Plan and Amount of coverage he wants. Coverage for spouse is optional.)

	Plan I Personal Travel and Local Business Travel		Plan II Personal Travel and Worldwide Business Travel	
	Amount	Annual Cost	Amount	Annual Cost
For Employee	\$25,000	\$7.50	\$25,000	\$16.25
	50,000	15.00	50,000	32.50
	100,000	30.00	100,000	65.00
Spouse	10,000	4.50	10,000	4.50

Contact the Training Office for further details, Bldg. 241, Room 138, ext. 5626.

NAS open house

Confirming recent discussions, ARC will display research aircraft at the forthcoming NAS Moffett Field Open House on May 8 from 10 a.m. to 5 p.m. The aircraft will be positioned for static display on the Navy apron with posters or descriptive material describing the aircraft and its role in NASA research programs. The cognizant project office will be responsible for furnishing these materials to Cy Sewell who will position the aircraft and set up displays. There is no requirement for the aircraft to be manned with project personnel as spokesmen, but if individuals wish to so participate, their efforts would be welcome.

The Aircraft Operations Division and the Applications Division will position the aircraft; Lt. Cdr. Stew Robinson (966-5315) is the contact for aircraft positions. Both Divisions should provide for ground crewmen to remain in the vicinity of the aircraft.

Aircraft proposed for display are: C-8 Buffalo, C-141, CV-990, UH-6 (Army), Lear 705, Twin Otter, X-14, and U-2.

Physical security of the aircraft will be coordinated by Ralph Maines of the Ames Security Office.

Mars (Continued from Page 1)

Lander's parachute opens. A new set of temperature and pressure sensors being working. The second temperature sensor is on one of the Lander foot pads while the pressure sensor, inside the Lander, makes contact with the atmosphere through a tube extending out of the Lander.

Pressure studies will help scientists determine what gases besides carbon dioxide the Martian atmosphere holds. The presence of argon is now considered likely. If even a trace of nitrogen is found on Mars, the odds for existence of some life form will greatly improve.