RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Mark D. Neschis (CN=Mark D. Neschis/OU=WHO/O=EOP [WHO])

CREATION DATE/TIME:28-OCT-1998 08:02:41.00

SUBJECT: DRAFT Glenn Launch Event Memo and Tabs

TO: Beverly J. Barnes (CN=Beverly J. Barnes/OU=WHO/O=EOP @ EOP [WHO])
READ:UNKNOWN

TEXT:
Does it make sense for OSTP to fold in the information concerning the Cronkite interview with thus memo? It seems redundant to have two memos that talk about the same thing.

---------- Forwarded by Mark D. Neschis/WHO/EOP on 10/28/98 08:01 AM ----------

Jefferson Hofgard
10/27/98 07:33:09 PM
Record Type: Record

To: See the distribution list at the bottom of this message
cc: Jefferson Hofgard/OSTP/EOP, Victor J. Villhard/OSTP/EOP, Mary E. Hanson/OSTP/EOP, Duncan T. Moore/OSTP/EOP
Subject:DRAFT Glenn Launch Event Memo and Tabs

For your review/refererence, below is our draft event memo for the Glenn launch, which includes a series of attachments we have prepared. I realize these attachments may drop off but I thought some of you would find these useful in preparing for related events (Cronkite interview, OVP trip to Ohio, etc.).

The attachments include:

- One-page mission overview
- Annotated astronaut bios
- Side-by-side comparison of Mercury capsule with the Space Shuttle
- Press guidance on Glenn launch
- Draft Fact sheet on Admin. accomplishments in space
- Suggest POTUS remarks at launch.

Dr. Lane is reviewing this material tonight and I expect him to sign off tomorrow, hopefully early in the day.
(Scheduling -- please let me know what changes, if any, need to be made to the sequence of events and/or the press coverage plans). I can be reached at 6-6043 or through signal. You can also reach Vic Vilhard (6-6042) with any comments.

---------- Forwarded by Jefferson Hofgard/OSTP/EOP on 10/27/98 07:13 PM ----------

Victor J. Villhard
10/27/98 07:13:53 PM
Record Type: Record

To: Jefferson Hofgard/OSTP/EOP
cc:
Subject:Event Memo and Tabs

DRAFT as of 7:00 p.m. on October 27,1998

THE LAUNCH OF SPACE SHUTTLE DISCOVERY (STS-95)

DATE: Thursday October 29, 1998

LOCATION: Kennedy Space Center
TIME: 2:00 p.m. (estimated 2-1/2 hour launch window)
FROM: Dr. Neal Lane

I. PURPOSE

To view the launch of STS-95, which will carry Senator John Glenn and six other astronauts. Prior to the launch, you will be interviewed by Walter Cronkite. Following the launch, you will meet the families of the astronauts and meet and greet NASA employees in the Launch Control Center.

II. BACKGROUND

Nearly 37 years ago, on February 20, 1962, John Glenn became the first American to orbit the Earth, completing three orbits in a five-hour flight and successfully achieving the ultimate objective of NASA□,s Project Mercury. Upon his arrival back home, Glenn became an American hero and a symbol of national pride. President John F. Kennedy voiced the sentiments of nearly all Americans when he congratulated Glenn on a successful mission that was □&second to none.□8

In the years following his historic mission, Glenn did not return to space, although his achievement was widely recognized and commemorated. In honor of the Friendship 7 mission, Glenn received the NASA Distinguished Service Medal, the highest award bestowed by NASA. In 1978, President Carter also awarded Glenn, Neil Armstrong, Alan Shepard, Frank Borman, Pete Conrad, and Gus Grissom (posthumously) the Congressional Space Medal. Only twelve individuals have ever received this honor. During your time in office, you have awarded four Medals: Jim Lovell (1995), Shannon Lucid (1996), Lt. Col. Edward White (1997, posthumously) and Lt. Commander Roger Chaffee (1997, posthumously).

John Glenn□,s return to space has rekindled public interest in the space program in a way not seen since the 1960s. NASA expects over 3,000 reporters to cover this launch which will be viewed in person by an estimated 500,000 people on the ground. While Glenn□,s launch has enormous public appeal, at the core of the mission are several scientific experiments, many of which are aimed at monitoring Glenn□,s physiological responses to weightlessness and applying what may be learned to similar changes that occur during the aging process. The bulk of the experiments will be conducted inside the □&Spacehab,□8 a pressurized laboratory that will fly inside the Shuttle□,s cargo bay. The mission is scheduled to last nine days, returning on November 7. Commanding STS-95 will be Curtis Brown, accompanied by Pilot Steven Lindsey, Mission Specialists Stephen Robinson and Scott Parazynski, and two international astronauts, Dr. Chiaki Mukai of the Japanese Space Agency, and Pedro Duque from the European Space Agency. This will be the first time a Spanish national has flown in space. A more detailed overview of the STS-95 mission is attached for your reference at Tab A. Biographical sketches of each astronaut are attached at Tab B.

Upon your arrival, you will receive a briefing in preparation for an interview with Walter Cronkite who will be covering the launch for CNN. Cronkite□,s close association with the space program throughout the 1960s is well known and, in a sense, akin to Glenn, this is his own □&return to space.□8 The Cronkite interview is an opportunity for you to recognize the tremendous courage of the crew, the accomplishments of John Glenn, and the hard work of the men and women at NASA who make it happen. It is also an opportunity for you to underscore your commitment to a strong, stable, and balanced space program. At present, the interview is scheduled to take place using a split screen, with you on the roof of the Launch Control Center and Cronkite in the CNN booth. The White House Press Office is finalizing these arrangements.

Following the interview, you and the First Lady will be escorted by NASA Administrator Dan Goldin and astronauts Bob Cabana and Eileen Collins (commanders of the next two Shuttle missions), to the roof of the Launch Control Center to view the launch. There will be a White House photographer only at this portion of the event.

Immediately following the launch, you will be escorted by NASA

Administrator Dan Goldin to a room inside the Launch Control Center to meet and greet 19 family members of the STS-95 crew, including Senator Glenn□,s wife, Annie, and their grown children and teenage grandsons. There will be a White House photographer only at this portion of the event.

You will then be escorted by NASA Administrator Dan Goldin to the launch control room or □&firing room□8 where you will meet, greet, and informally congratulate the employees on a successful launch. This portion of the event will include White House press pool and a small group of print media.

From the □&firing room□8 you will be escorted to the lobby of the Launch Control Center where the Kennedy Space Center launch team traditionally gathers after each launch to share a meal of beans and cornbread. You will provide brief remarks, then work the ropeline and depart. This portion of the event will include White House press pool and a small group of print media.

For your reference, a comparison between John Glenn□,s 1962 Friendship 7 and today□,s Space Shuttle is attached at Tab C. A Fact Sheet prepared for the White House Press Office highlighting your Administration□,s accomplishments in space is attached at Tab D. Press guidance and sample questions and answers are attached at Tab E.

Members of Congress, some members of your Cabinet, senior Executive Branch representatives, select foreign dignitaries, and other distinguished guests will also
be attending, but will view the launch from a separate location several miles from
the launch pad known as □&Banana Creek.□8 A list of these attendees is attached at
Tab F.

Possible Countdown Delays and Contingencies
Space Shuttle launches can be delayed anywhere from several minutes to several days. At virtually any point in the countdown sequence, the launch may be stopped for technical, safety, or weather-related reasons. Over the past three years, almost 80% of the Space Shuttle missions have been launched on time. For this mission, the launch window is from 2:00 p.m. to 4:30 p.m. During this period, attendees viewing the launch will be required to remain at the LCC. NASA has made appropriate office accommodations for you and your staff if a prolonged delay occurs during the countdown.

While NASA□,s number one priority is Space Shuttle safety, there is still risk involved in human spaceflight. NASA estimates the probability of an accident that would result in loss of the Space Shuttle vehicle during ascent is 1 in 438. Should a launch accident occur, NASA has a well-defined contingency plan which calls for immediate activation of a pre-designated Shuttle Mishap Interagency Investigation Board composed of senior USAF, FAA, NASA and DOT personnel.

III. PARTICIPANTS

Event participants:
The President
The First Lady
Dr. Neal Lane
NASA Administrator Dan Goldin
Astronaut Bob Cabana
Astronaut Eileen Collins

Family members you will meet after the launch:

Annie Glenn	wife of Senator Glenn
Dr. David Glenn	son of Senator Glenn
Dr. Karen Fagerstrom	daughter-in-law of Senator Glenn
Daniel Glenn (16)	grandson of Senator Glenn
Zachary Glenn (14)	grandson of Senator Glenn
Lyn Glenn	daughter of Senator Glenn
Ann Brickert	guest of Commander Curtis Brown
Greg Brown	son of Commander Curtis Brown
Diane Lindsey	wife of Pilot Steven Lindsey

Jessica Lindsey (11)	daughter of Pilot Steven Lindsey
Jason Lindsey (8)	son of Pilot Steven Lindsey
Jillian Lindsey (5)	daughter of Pilot Steven Lindsey
Makio Mukai	husband of Dr. Chiaki Mukai (NASDA)
Gail Parazynski	wife of Scott Parazynski
Luke Parazynski (2)	son of Scott Parazynski
Consuelo Femenia Duque	wife of Pedro Duque
Andres Duque	son of Pedro Duque
Irene Duque	daughter of Pedro Duque
Marc Duque	son of Pedro Duque

IV. PRESS PLAN

Air Force One arrival and departure, open press.

While viewing launch, White House still photographer only.

Meeting the astronauts□, families, White House still photographer only.

After the launch in the □&firing room,□8 small White House press pool.

Beans and cornbread meal, small White House press pool.

V. SEQUENCE OF EVENTS

Air Force One lands at Kennedy Space Center

Proceed to Launch Control Center (LCC)

Interview with Walter Cronkite

You, the First Lady, NASA Administrator Dan Goldin and astronauts Bob Cabana and Eileen Collins view launch (scheduled for 2:00 p.m.)

You and the First Lady meet and greet family members
(White House photographer only)

You and First Lady are escorted to the Launch Control Center □&firing room□8 where you congratulate employees

You proceed to lobby of Launch Control Center, deliver brief remarks, work ropeline and depart.

VI. REMARKS

Provided by OSTP, attached at Tab G

VII. ATTACHMENTS

Tab A - STS-95 Mission Overview
Tab B - Astronaut Biographies
Tab C - Comparison of Mercury Friendship 7 with Space Shuttle
Tab D - Administration Accomplishments in Space
Tab E - Press Guidance and Sample Q&A
Tab F - VIP Guest List
Tab G - Remarks

VIII. STAFF CONTACT

Jeff Hofgard (6-6043)
Vic Villhard (6-6042)

Tab A - STS-95 Mission Overview

STS-95 MISSION OVERVIEW

More than thirty six years after he made history as the first American to orbit the Earth, Senator John H. Glenn, Jr. will return to space as part

of a multi-national crew with the launch of the Space Shuttle Discovery October 29, 1998. STS-95, will involve more than 80 scientific experiments investigating mysteries that span the realm from the inner universe of the human body to studies of our own Sun and its solar activity.

On February 20, 1962, when Glenn flew in his Friendship 7 Mercury capsule, the largest mystery facing the young NASA space program was whether humans could even survive in the hostile environment of space. In the 121 U.S. space missions since Glenn□,s flight, more than 200 Americans have flown in space. Glenn, who inspired many current astronauts to pursue space flight as a career, continues to inspire people of all generations as he returns to space.

In addition to Senator Glenn, the STS-95 crew includes a Japanese astronaut, Dr. Chiaki Mukai, making her second flight, and Pedro Duque, who will be the first Spanish national to fly in space.

The wealth of scientific data accumulated during these space flights validate apparent similarities between the effects of space flight and aging. Glenn will be a test subject for specific investigations which mimic the effect of aging, including loss of muscle mass and bone density, disrupted sleep patterns, a depressed immune system, and loss of balance.

Scientific endeavors on the STS-95 mission will also expand our understanding of the Sun and how it affects life on Earth. The Spartan 201 spacecraft will be released by the crew on the fourth day of the mission and will spend two days studying the solar corona, the solar wind, and how the solar wind affects activities in Earth-orbit and on the ground. The Sun drives our weather, and energetic eruptions on the Sun are capable of disrupting satellites and communication and power systems on Earth. After two days of solar observations, Discovery□,s crew will haul the spacecraft back into the Shuttle□,s cargo bay and return it to Earth.

Six astronomical instruments comprise the International Extreme Ultraviolet Hitchhiker Experiment (IEH-3) which will be carried in Discovery□,s payload bay. These instruments support experiments involving studies of stars, remnants of supernovae, and star formation. Discovery will carry a variety of materials and equipment for use during the third Hubble Space Telescope servicing mission, currently scheduled for mid-2000, as well as a Spacehab module. Inside Spacehab, almost 30 smaller experiments ranging from materials science, to plant growth, to developing new techniques for delivering anti-tumor medications, will be conducted by the astronauts. Sponsored by NASA, the Canadian Space Agency, the European Space Agency, and the Japanese Space Agency (NASDA), these studies take the best advantage of the unique environment of space to conduct these diverse studies.

The STS-95 mission is scheduled to last almost 9 days. A launch on October 29 and nominal mission duration would have Discovery landing back at Kennedy Space Center after its 3 « million mile journey on November 7, at about 12 noon Eastern Standard Time. STS-95 will be the 25th flight of the Space Shuttle Discovery and the 92nd mission flown since the start of the Space Shuttle program in April 1981.

Tab B - Astronaut Biographies

ASTRONAUT BIOGRAPHICAL SKETCHES

Lt. Col. Curis L. Brown, USAF □) STS-95 Commander Brown is an Air Force Academy graduate who has logged over 977 hours in space. He was selected as an astronaut candidate in June 1987, and has worked on Shuttle upgrades and operations. This will be Brown□,s fifth flight on the Shuttle. He is unmarried and has one son, Greg.

Lt. Col. Steve Lindsey, USAF □) STS-95 Pilot Lindsey is an Air Force Academy graduate who has logged over 3,300 hours of flying time in 50 different types of aircraft. He became a NASA astronaut in 1996, and has worked on weapons systems for military aircraft and upgrades for the

Shuttle. STS-95 will be Lindsey□,s second space flight. He and his wife Diane have three children: Jessica (11), Jason (8), and Jillian (5).

Dr. Stephen Robinson □) STS-95 Mission Specialist Prior to his selection as an astronaut in December 1994, Dr. Robinson was responsible for a number of NASA aerodynamics and engineering research projects. This will be his second space mission. During Dr. Robinson□,s first STS mission in 1997, he logged over 284 hours in space. Robinson is unmarried.

Dr. Scott Parazynski □) STS-95 Mission Specialist A medical doctor by training, Parazynski has conducted extensive research on human adaptation to stressful environments. He has logged over 521 hours in space, including 5 hours of extravehicular activity (EVA). This will be Parazynski□,s third flight, where he will serve as the flight engineer. He and his wife, Gail, have one son, Luke (2).

Pedro Duque □) STS-95 Mission Specialist (European Space Agency) Duque joined ESA□,s astronaut corps in 1992 following several years of orbital determination work in Germany. Duque was trained as a research astronaut (back-up crew) for Soyuz and Mir and supported the joint ESA-Russian EUROMIR 94 and 95 missions. Duque will become the first Spanish national to fly in space. Duque and his wife, Consuelo, have three children: Andres, Irene, and Marc.

Chiaki Mukai □) STS-95 Payload Specialist (NASDA Astronaut) A cardiovascular surgeon, Mukai became the first Japanese female to fly in space on the STS-65 mission in 1984, when she logged over 353 hours in space. This will be her second flight. Mukai and her husband, Makio, have no children.

John H. Glenn □) STS-95 Payload Specialist Senator Glenn piloted the Mercury-6 (Friendship 7) spacecraft on the first manned orbital mission by the United States. He has logged nearly 9,000 hours of flying time, and 5 hours in space. This will be Glenn□,s second space flight.

Col. Robert Cabana, USMC □) STS-88 Commander Cabana will command the first U.S. assembly mission for the International Space Station on December 3, 1998, mating the U.S. Unity Node to the Russian Zarya module (the first element of the Station) which is scheduled for a Russian launch on November 20, 1998. Since 1990, he has flown three space missions. He has over 353 hours in space and over 5,000 hours in 33 types of aircraft. He and Collins will view the launch with you.

Lt. Col. Eileen Collins, USAF □) STS-93 Commander Collins will be the first woman to command a Space Shuttle mission, STS-93, scheduled for launch aboard Columbia in March 1999, to deploy the AXAF spacecraft□*an X-ray telescope. In 1995, she became the first woman Shuttle pilot during the first rendezvous mission with the Russian space station, Mir. She also flew a Mir docking mission in 1997. Collins has logged over 419 hours in space and has over 5,000 hours in 30 types of aircraft.

Tab C - Comparison of Mercury Friendship 7 with Space Shuttle

MERCURY/FRIENDSHIP 7 AND SHUTTLE DISCOVERY/STS-95 COMPARISON

Mercury Capsule Name	Friendship 7 (one flight)
Orbits	3 orbits
Duration	4 hours, 55 min., 23 sec.
Distance Flown	75,679 statute miles
Maximum G□,s	7.7
Payload	None
Total individual	75,679 statute miles

Spacecraft mileage	(one mission)
Weight	4256.34 lbs, 2657.6 lbs. at reentry
Lift-off thrust	360,000 lbs. (Atlas Launch Vehicle)
Crew Size	1
Volume (habitable)	36 ft3

Interior environment Glenn was restrained by his couch harness assembly and by the limited space in the interior. Only one stowage compartment was available. Other items were stowed in bags, in pouches, or on specific attachments to the interior.

Discovery Orbiter

Name	Discovery (23 flights as of 2/98)
Orbits	Approximately 144 orbits for STS-95
Duration	Approximately 8 days, 20 hours
Distance Flown	Approximately 3,600,000 miles
Maximum G□,s	3

Payload Spacehab Research Module; Hubble Orbital Systems Test Platform; SPARTAN-201-05 Reflight; International Extreme Ultraviolet Hitchhiker; Getaway Special Canisters

Total individual Spacecraft mileage missions)	68,837,819 statute miles (23 Discovery orbiter
Weight	153,819 lbs. (Orbiter empty but with three Space Shuttle Main Engines)
Lift-off thrust	7,000,000 lbs. (Space Shuttle Main Engines and Solid Rocket Boosters)
Crew Size	2-7
Volume (habitable) member)	Crew compartment of 2,325 ft3 (332 ft3 per crew

Interior environment During ascent and descent the crew members are strapped into seats on either the flight deck or the middeck. The flight deck will hold four persons, while the middeck is usually equipped for three. (STS-71 Atlantis brought eight members down, four on each deck.) On orbit, crew members have a free range of movement throughout the crew compartment, as well as the Spacehab in the payload bay.

Tab D - Administration Accomplishments in Space

FACT SHEET

CLINTON ADMINISTRATION SPACE ACCOMPLISHMENTS

The U.S. Space Program: A Long-term Investment in America□,s Future

For four decades, the United States has led the world in the exploration and use of outer space. Our achievements in space have inspired a generation of Americans and people throughout the world. President

Clinton believes that we should maintain this leadership through a strong, stable, and balanced national space program based on revolutionary new partnerships with the private sector and with other spacefaring nations. Our space activities represent a critical investment in America□,s 21st century economy. Maintaining our leadership role in space will serve national security, foreign policy, and economic goals. To that end, the Clinton Administration has vigorously supported policies and programs designed to cut costs, increase efficiency, and spur scientific and technological advancement.

Transforming NASA into a High-Payoff Research and Development Agency

In 1992, NASA□,s budget request for fiscal year 1993 was $15 billion and its budget plan assumed growth to $21 billion by FY 1998. In fiscal year 1991, only one-third of NASA□,s budget was devoted to the sciences and aerospace technology. NASA was criticized as having a bloated bureaucracy, employing too many civil servants (25,000), and pursuing missions that were too ambitious, too expensive, and took too long to develop. During that period, NASA was launching only two Earth and Space Science spacecraft each year, with an average cost of $590 million and an eight-year development time.

In 1998, NASA is regarded as a transformed agency. NASA has been a leader in the reinvention of Government process. NASA□,s annual budgets have been in the $13 to $14 billion range in recent years and its civil service workforce is under 18,000, with its headquarters staffing at about half its 1992 level. The percentage of the NASA budget devoted to the sciences and aerospace technology has increased to 42%, even though the total amount appropriated to NASA by Congress for fiscal year 1998 ($13.6 billion) is $650 million less than fiscal year 1993's appropriation. Compared to 1991, NASA is now launching an average of eight spacecraft per year versus two, while developing them at one third the cost and in half the time. The cost of Space Shuttle flights is down by more than a third and all safety indicators are significantly improved. The NASA workforce continues to be redeployed from doing the day-to-day management of spaceflight operations into research and technology.

Clinton Administration Space Policies: The Foundation for Progress

Over the past six years, the Clinton Administration has established and implemented a series of space policies to address a broad range of civil, national security, and commercial activities. These policies are based on the cumulative experience of the United States in space, they recognize the current domestic and international environments□*most importantly, the end of the Cold War□*and they reflect the growing maturity of U.S. government, commercial, and international space capabilities. These policies explain major Administration initiatives, goals, and priorities; they establish and enable U.S. government agency roles and activities; and they recognize the interactions among the four space sectors□*civil, military, intelligence, and commercial.

National Space Policy (PDD/NSC□)8), September 1996
The Clinton Administration□,s overarching national space policy establishes the goals and priorities for America□,s activities in space. America□,s space program enhances knowledge of the Earth, solar system and universe through human and robotic exploration; strengthens U.S. national security; enhances economic competitiveness and scientific and technical capabilties of the U.S.; encourages commercial use of space; and promotes international cooperation to further U.S. domestic, national security, and foreign policies.

Convergence of U.S. Polar Orbiting Weather Satellites (PDD/NSC□)2), May 1994
President Clinton has taken the initiative to integrate the military and civil polar orbiting weather satellite programs into a single system□*the National Polar Orbiting Environmental Satellite System (NPOESS)□*designed to continue satisfying operational requirements while reducing development and operating costs.

LANDSAT Remote Sensing Strategy (PDD/NSC□)3), May 1994
President Clinton has pursued the continuance of the LANDSAT 7 program,

assuring the continuity of more than 20 years of calibrated LANDSAT-type and quality of earth remote sensing data for civil, commercial, scientific, and environmental uses, while reducing the risk of a data gap.

National Space Transportation Policy (PDD/NSC□)4), August 1994
President Clinton clearly assigned responsibility for expendable launch vehicle technology and development to the Department of Defense, while assigning NASA the lead responsibility for developing and demonstrating technologies to enable a decision regarding development of a next-generation reusable launch vehicle. He also reinforced the long-standing, stable policy environment regarding U.S. government support for U.S. commercial space launch activities.

U.S. Global Positioning System Policy (PDD/NSTC-6), March 1996
The Clinton Administration established a strategic vision for the future management and use of GPS, addressing a broad range of military, civil, commercial, and scientific interests, both national and international. A key goal is to encourage the acceptance and integration of GPS into peaceful civil, commercial, and scientific applications worldwide, while promoting safety and efficiency in transportation and other fields.

Commercial Remote Sensing, March 1994
The Clinton Administration recognized the value of commercial and international capabilities in remote sensing from space to support scientific, industrial, government, and commercial users. The goal of the Administration□,s policy is to support and enhance U.S. industrial competitiveness while protecting U.S. national security and foreign policy interests. The Administration established a case-by-case review process□*including specific conditions□*for proposals to license the operation of U.S. private remote sensing space systems, to transfer advanced remote sensing capabilities, or to transfer sensitive technology under government-to-government agreements.

The environment created by President Clinton□,s comprehensive space policies has enabled and advanced a number of significant space programs and activities to further the Administration□,s goals and priorities for the civil, national security, and commercial sectors. Significantly, on the basis of this stable and predictable policy environment, the U.S. commercial space sector has recently made substantial private investments to develop new capabilities and expand capacity to address unprecedented growth in demand for a variety of telecommunication services for customers across the United States and around the world.

Clinton Administration Space Programs and Initiatives: Significant Accomplishments

America□,s accomplishments in space under the Clinton Administration span a range of civil, commercial, and national security programs that support hundreds of thousands of high-tech, high-wage jobs across the country. Emerging applications developed by the commercial space sector promise to continue expanding the value of space activities to our national economy and prosperity. U.S. space capabilities have continued to provide unparalleled contributions to the national security of the United States. Specific highlights of U.S. space accomplishments under the Clinton Administration include:

International Space Station
Under President Clinton□,s leadership, NASA welcomed Russia into the 13-nation partnership, making the International Space Station program the largest international scientific cooperative project in history. During the five years since the Clinton Administration□,s 1993 redesign, the U.S. and foreign partners have built over 400,000 pounds of flight hardware and the first elements are scheduled for launch and assembly in orbit on November 20 and December 3, 1998.

The five-year, nine-mission Shuttle-Mir experience gave us invaluable experience in international space operations, while reducing health and safety risks for future astronauts who will fly on the International Space Station. By the time the seventh and final U.S. crew member returned after a long-duration stay, U.S. astronauts had spent 919 days in space aboard the Mir space station. This exceeds by almost five months the

total time accumulated in orbit during more than 90 Shuttle flights since the beginning of the Shuttle program in 1981.

Space Transportation
In 1994, the Clinton Administration announced a strategy to pursue low-cost access to space. In October 1998, government and industry announced the design□*and $3 billion in government contract awards matched by $2 billion in private investment□*to develop and fly two families of Evolved Expendable Launch Vehicles (EELVs) that will reduce launch costs by 25 to 50 percent over the next 20 years, facilitating access to space for both commercial and government payloads well into the next century.

NASA is at work with its industry partners to build and fly reusable launch vehicle technology demonstration vehicles under a government-industry program with a goal of reducing launch costs by a factor of ten within ten years. NASA has committed more than $900 million to the X-33 program, along with more than $200 million in private investment. Both the X-33 and the smaller X-34 well into their construction phase, and both are scheduled for test flights next year.

Since 1992, NASA has made major strides to improve the safety and reliability of the Space Shuttle system, as well as its operational efficiency. Through a series of technical and process improvements, NASA has significantly reduced risks by improving the design of the Space Shuttle Main Engine, conducted 16 consecutive launches over the past two years within the first five minutes of the launch window (excluding weather scrubs), and reduced the average number of in-flight anomalies by a factor of three since 1992. At the same time, operational efficiencies and performance improvements have combined to cut by half the cost per pound of payload delivered to orbit.

Space Science and Origins Initiative
Since the first Hubble repair mission in 1993, Americans and people the world over have been astounded and inspired by an amazing succession of Hubble Space Telescope images that deepen and challenge our understanding of the universe in ways we could not have imagined even ten years ago. NASA□,s Mars Pathfinder and Sojourner rover likewise captured the imagination of people around the world during their mission of discovery in the summer of 1997. NASA□,s Lunar Prospector has detected evidence to suggest the presence of ice on the moon. Galileo□,s images and discoveries in the Jupiter system suggest that there may be oceans on one of Jupiter□,s moons, Europa. And over the past few years, scientists from around the world have detected evidence for more than 20 planets around other stars in our galaxy□*establishing the foundation for the Administration□,s $900 million Origins initiative to detect and characterize planetary systems beyond our solar system.

Under President Clinton, NASA has revolutionized space exploration by replacing large, complex spacecraft with smaller, □&faster, better, cheaper,□8 and more frequent missions with shorter development times. This new approach to space exploration has allowed NASA to cut average development costs by more than half while almost doubling the number and frequency of Earth and space science missions.

Exploring Planet Earth
Space-based Earth observation provides a wealth of valuable information for the protection of public health, safety, and national security. Acknowledging the need for efficient operation of earth observation systems, President Clinton directed the development and operation of a LANDSAT 7 system under the coordination of NASA, NOAA, and USGS. In order to reduce redundancy in the operation of space-based observation systems, the Administration established a single, converged National Polar-Orbiting Environmental Satellite System (NPOESS), which activated a common ground station to control both DoD and NOAA weather satellites in 1997. These programs, along with other NASA Earth Science and NOAA satellite missions, give us powerful new tools for analyzing weather, and for long-term prediction of floods, drought, violent storms, and other natural occurrences like El Ni□o and La Ni□a phenomena and variations in the ozone hole over Antarctica. They also give us fundamental new insights into how human activities may have profound effects on our planet.

GPS
In March, 1996, the Clinton Administration announced a new policy for the use and management of the United States Global Positioning System (GPS), a service that is offered free of charge to U.S. allied and military forces and civilian users all over the world. Recognizing that GPS is rapidly becoming a crucial component of the Global Information Infrastructure, offering a wide range of important applications in areas such as navigation, global change research, and mapping, President Clinton has outlined a policy that aims to balance both national security and commercial interests. As demand grows for GPS services among civil users, the Administration is devising a way to ensure adequate civil access to GPS while protecting precise positioning service for authorized military users.

Commercial Space Activities
In addition to the private investments U.S. industry has made to reduce launch costs through cooperative programs with government agencies, private investors have also committed well over $1 billion toward the development of new commercial launch systems and international partnerships aimed at addressing global demand for commercial satellite launches. State governments and private entities have also built and started operating their own private launch sites in the past few years. Commercial launch demand has doubled since 1992, and commercial launches now outpace U.S. government launch rates for expendable vehicles.

The commercial sector is also rapidly developing new space-based capabilities, including global, mobile messaging, data transfer, and cellular phone services. The first wave of these capabilities is already built and operating, and the next wave, including high-speed Internet access from any point on Earth, is in development. The Clinton Administration□,s stable and predictable commercial space policy environment contributed to the ability of U.S. industry to develop and field these new space capabilities which promise to improve life on Earth.

Tab E - Press Guidance and Sample Q&A

SPACE SHUTTLE MISSION WITH JOHN GLENN
October 26, 1998

CONTEXT: The Space Shuttle mission with John Glenn is scheduled for launch from NASA□,s Kennedy Space Center, Florida between 2:00 pm and 4:30 pm on October 29. The President and First Lady plan to attend the launch. The October 20 New York Times includes an article regarding Shuttle safety. It will have been about five months (149 days) between launches□*two weeks less than the longest interval between scheduled missions in 1990. The October 21 New York Times reports that in August, John Glenn was dropped from one of three age-related experiments he was to have participated in during his upcoming Space Shuttle mission. The experiment in question was to test the hypnotic effects of very small amounts of the natural hormone, melatonin, on sleep and daytime activities in space. Mr. Glenn will not participate in this one experiment because he did not meet one of the medical criteria established by the scientific investigator who designed the experiment. NASA□,s rules do not allow disclosure of medical information without the subject□,s permission and Mr. Glenn has declined public comment to elaborate on this matter. NASA will not make a determination whether to pursue further age-related research in space using elderly astronauts, including women, until they receive and evaluate the data from John Glenn□,s mission.

POLICY:

ú The Administration feels very strongly that the safety of the Space Shuttle program is of the utmost importance and must remain the number one priority for the operation and maintenance of the Space Shuttle system.
ú For safety and technical reasons, the NASA Administrator makes the decisions regarding who will fly on the Space Shuttle. The White House does not make such decisions.
ú The NASA Administrator decided that John Glenn would be a crew

member on this Space Shuttle mission, and we should refer any detailed questions on this to NASA.

Will President Clinton be the first President to witness a launch?

No. According to NASA, President Nixon was present for the launch of the second mission to land astronauts on the moon, Apollo 12 in November 1969.

Are there any concerns regarding Shuttle safety because the President and First Lady will be there for the launch?

The Administration feels very strongly that the safety of the Space Shuttle program is extremely important and must remain the number one priority for operation and maintenance of the Space Shuttle system. The President and First Lady would not be attending the launch if there were any concerns whatsoever regarding disruptions or pressure that could lead to safety concerns.

The NASA Administrator has assured us that having the President and First Lady at the launch site will not affect NASA□,s focus on ensuring a safe launch. Safety is and always has been NASA□,s highest priority. For that reason, the highly professional launch team works in facilities designed specifically for them to perform launch operations without distractions. NASA has assured us that they would never do anything that would compromise launch safety under any circumstances.

Are there any safety concerns because of the time that has elapsed since the last Shuttle launch?

NASA developed a practice schedule to keep their team fresh. NASA also conducted an exhaustive Flight Readiness Review on October 13 at Kennedy Space Center, including representatives of the Aerospace Safety Advisory Panel. All concerns, including the relatively long interval between launches, were discussed in detail . Following those presentations, all participants presented their signed certificates of flight readiness verifying their readiness to safely conduct the launch of STS-95 on October 29. I would have to defer to NASA for more details. However, I would like to reiterate that the Administration feels very strongly that the safety of the Space Shuttle program is of the utmost importance and must remain the number one priority for the operation and maintenance of the Space Shuttle system.

Is there really scientific value in John Glenn□,s mission, or is he really just going for a joyride?

John Glenn will be participating in scientific experiments designed to help understand the changes in sleep that are associated with the aging process. NASA hopes these observations may lead to better understanding of how to treat people on earth who suffer from sleep disorders. NASA has never before studied the sleep patterns of a 77-year-old, and this will provide important insights into how the sleep patterns of an elderly individual change during space flight and how those changes differ from those of a younger astronaut.

Why didn□,t NASA know sooner about the problem that prevents John Glenn from participating in one of the age-related experiments involving melatonin?

First, it is not unprecedented that astronauts who are medically fit to fly in space do not meet selection criteria for inclusion in particular experiments. In fact, on this particular mission alone, NASA tells us that two other crew members declined to participate in or withdrew from other inflight investigations□*as is their right as part of the informed consent process.

John Glenn will participate in two portions of the sleep study, but not the third where the subjects take melatonin. During pre-flight testing of all the participants, NASA determined that John Glenn did not meet one of the criteria for taking melatonin. This is standard procedure, and the investigators will still be able to study new information regarding sleep

patterns and natural melatonin levels in a 77-year old subject, before, during, and after space flight.

What about flying an elderly woman on the Space Shuttle? Hasn□,t Jerrie Cobb met with the First Lady to discuss this?

I understand that Jerrie Cobb underwent some of the same medical evaluations that were designed for the original seven Mercury astronauts in the early 1960s, and that she is very interested in flying on the Space Shuttle to continue the age-related research that John Glenn will participate in on his Shuttle mission. However, she was never a NASA astronaut trainee and the medical program she participated in was neither funded nor sponsored by NASA. For a variety of technical and safety-related reasons, the NASA Administrator makes determinations as to who can fly aboard the Space Shuttle. It is not a White House decision.

IF PRESSED: The First Lady meets with many interesting and exciting individuals from across the country and around the world. But, again, it will be NASA□,s decision whether to continue age-related research on the Space Shuttle, and for safety and technical reasons, the NASA Administrator is the one who will determine who will fly on the Shuttle.

Tab F - VIP Guest List

TBD

Tab G - Remarks

REMARKS

-- It is a great privilege for Hillary and I to be among the first to congratulate each of you on a tremendously successful and historic launch.
-- I want to thank NASA Administrator Dan Goldin, Neal Lane, my Science Advisor, Roy Bridges, Director of the Kennedy Space Center, and Bob Cabana and Eilene Collins who accompanied us today, for making this possible. It is a moment that made me immensely proud of our space program, the men and women involved, and our country.
-- I also want to recognize the tremendous courage of the crew on board Space Shuttle Discovery: Commander Brown, Pilot Steve Lindsey, Mission Specialists Stephen Robinson and Scott Parazynski, two international astronauts, Dr. Mukai of Japan and Mr. Duque of the European Space Agency, and of course, John Glenn. You all have our respect and admiration.
-- I can think of no better way to celebrate NASA's 40th anniversary than to come here today and witness, along with each of you, history in the making. With the return of John Glenn to space, NASA has reignited the sense of excitement and national purpose that is so much a part of our space program. Thirty-six years ago, President Kennedy referred to John Glenn's flight on Friendship 7 as "second to none." Today, once again, we are reminded of these words as we testify to the incredible achievements made possible through space exploration.
-- I cannot say enough about John Glenn, his accomplishments, and what he's given of himself for his country. His return to space today inspires us across generations, uniting the courage and determination that forged our space program with the destiny that awaits us in space. And I know that John would agree with me when I say that this mission is a lot bigger than one man alone: it's about the thousands of men and women at NASA that make it happen.
-- You can all take a great deal of pride in the fact that you are at the cutting edge of America's leadership role for the 21st century. The scientific and technological advances we've developed through the space program have propelled America toward the future, eager to push the boundaries of exploration and discovery. That is what NASA is about. The nation owes you all a debt of gratitude for the countless hours, weeks, months and years you've devoted to defining our common future.
-- And it is a future that is knocking on our doorstep. Next month, we begin launching the International Space Station into orbit. It will be

the largest, most sophisticated laboratory ever built in space. It will also serve as a powerful symbol of what nations can do through peaceful cooperation.

-- We are also moving forward with the development of new technologies for reusable space transportation. When I look back and compare John Glenn's original Friendship 7 and compare it to the awesome power of the Space Shuttle, it fills me with a tremendous sense of excitement about the challenges that lie ahead in developing new and advanced space vehicles.

-- The space program represents an investment in America's a future and you have my commitment that the Vice President and I will do all we can to protect that investment for generations to come.

-- Thank you again.

--END--

Message Sent
To:_____
Clyde E. Williams/WHO/EOP
Kris M Balderston/WHO/EOP
Lisa J. Levin/WHO/EOP
Jennifer M. Palmieri/WHO/EOP
Nanda Chitre/WHO/EOP
Mark D. Neschis/WHO/EOP
Jeffrey M. Smith/OSTP/EOP
Elisa Millsap/WHO/EOP
Anne M. Edwards/WHO/EOP
Jim Kohlenberger/OVP @ OVP
Phillip Caplan/WHO/EOP
Jeffrey A. Forbes/WHO/EOP
Joseph C. Fanaroff/WHO/EOP
Paul E. Begala/WHO/EOP

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Joseph C. Fanaroff (CN=Joseph C. Fanaroff/OU=WHO/O=EOP [WHO])

CREATION DATE/TIME:28-OCT-1998 13:06:31.00

SUBJECT: Re: Fact Sheet on Space Accomplishments

TO: Jefferson Hofgard (CN=Jefferson Hofgard/OU=OSTP/O=EOP @ EOP [OSTP])
READ:UNKNOWN

TEXT:
Jeff, this paper is good, actually, it's too good, it's too much for a 1 pager which is what I send out.. can you advise as to what the "best of" this page is.. with some tie - in to the space shuttle launch. The way I'd like to frame it is:

1st Para: Today, President Clinton attends the space launch..... during this mission Sen. Glenn and his crewmates will.....

2d Para. : President Clinton has made the space program an important part of his agenda: Under President Clinton: (a few achievement bullets)

3d Para: President Clinton is committed to moving America's space program into the 21st Century (talk about r&D and some of the other new initiatives).

Any suggestions?

Jefferson Hofgard
10/28/98 12:38:27 PM
Record Type: Record

To: Joseph C. Fanaroff/WHO/EOP
cc:
Subject:Fact Sheet on Space Accomplishments

Here it is. If you recast it, can I take a look before it goes out?
Thanks.
---------- Forwarded by Jefferson Hofgard/OSTP/EOP on 10/28/98 12:36 PM ----------

Victor J. Villhard
10/28/98 12:11:26 PM
Record Type: Record

To: Jefferson Hofgard/OSTP/EOP
cc:
Subject:Fact Sheet on Space Accomplishments

FACT SHEET

CLINTON ADMINISTRATION SPACE ACCOMPLISHMENTS

The U.S. Space Program: A Long-term Investment in America□,s Future

For four decades, the United States has led the world in the exploration and use of outer space. Our achievements in space have inspired a generation of Americans and people throughout the world. President Clinton believes that we should maintain this leadership through a strong, stable, and balanced national space program based on revolutionary new partnerships with the private sector and with other spacefaring nations. Our space activities represent a critical investment in America□,s 21st century economy. Maintaining our leadership role in space will serve national security, foreign policy, and economic goals. To that end, the Clinton Administration has vigorously supported policies and programs designed to cut costs, increase efficiency, and spur scientific and technological advancement.

Transforming NASA into a High-Payoff Research and Development Agency

In 1992, NASA□,s budget request for fiscal year 1993 was $15 billion and its budget plan assumed growth to $21 billion by FY 1998. In fiscal year 1991, only one-third of NASA□,s budget was devoted to the sciences and aerospace technology. NASA was criticized as having a bloated bureaucracy, employing too many civil servants (25,000), and pursuing missions that were too ambitious, too expensive, and took too long to develop. During that period, NASA was launching only two Earth and Space Science spacecraft each year, with an average cost of $590 million and an eight-year development time.

In 1998, NASA is regarded as a transformed agency. NASA has been a leader in the reinvention of Government process. NASA□,s annual budgets have been in the $13 to $14 billion range in recent years and its civil service workforce is under 18,000, with its headquarters staffing at about half its 1992 level. The percentage of the NASA budget devoted to the sciences and aerospace technology has increased to 42%, even though the total amount appropriated to NASA by Congress for fiscal year 1998 ($13.6 billion) is $650 million less than fiscal year 1993's appropriation. Compared to 1991, NASA is now launching an average of eight spacecraft per year versus two, while developing them at one third the cost and in half the time. The cost of Space Shuttle flights is down by more than a third and all safety indicators are significantly improved. The NASA workforce continues to be redeployed from doing the day-to-day management of spaceflight operations into research and technology.

Clinton Administration Space Policies: The Foundation for Progress

Over the past six years, the Clinton Administration has established and implemented a series of space policies to address a broad range of civil, national security, and commercial activities. These policies are based on the cumulative experience of the United States in space, they recognize the current domestic and international environments□*most importantly, the end of the Cold War□*and they reflect the growing maturity of U.S. government, commercial, and international space capabilities. These policies explain major Administration initiatives, goals, and priorities; they establish and enable U.S. government agency roles and activities; and they recognize the interactions among the four space sectors□*civil, military, intelligence, and commercial.

National Space Policy (PDD/NSTC□)8), September 1996
The Clinton Administration□,s overarching national space policy

establishes the goals and priorities for America□,s activities in space. America□,s space program enhances knowledge of the Earth, solar system and universe through human and robotic exploration; strengthens U.S. national security; enhances economic competitiveness and scientific and technical capabilties of the U.S.; encourages commercial use of space; and promotes international cooperation to further U.S. domestic, national security, and foreign policies.

Convergence of U.S. Polar Orbiting Weather Satellites (PDD/NSTC□)2), May 1994
President Clinton has taken the initiative to integrate the military and civil polar orbiting weather satellite programs into a single system□*the National Polar Orbiting Environmental Satellite System (NPOESS)□*designed to continue satisfying operational requirements while reducing development and operating costs.

LANDSAT Remote Sensing Strategy (PDD/NSTC□)3), May 1994
President Clinton has pursued the continuance of the LANDSAT 7 program, assuring the continuity of more than 20 years of calibrated LANDSAT-type and quality of earth remote sensing data for civil, commercial, scientific, and environmental uses, while reducing the risk of a data gap.

National Space Transportation Policy (PDD/NSTC□)4), August 1994
President Clinton clearly assigned responsibility for expendable launch vehicle technology and development to the Department of Defense, while assigning NASA the lead responsibility for developing and demonstrating technologies to enable a decision regarding development of a next-generation reusable launch vehicle. He also reinforced the long-standing, stable policy environment regarding U.S. government support for U.S. commercial space launch activities.

U.S. Global Positioning System Policy (PDD/NSTC-6), March 1996
The Clinton Administration established a strategic vision for the future management and use of GPS, addressing a broad range of military, civil, commercial, and scientific interests, both national and international. A key goal is to encourage the acceptance and integration of GPS into peaceful civil, commercial, and scientific applications worldwide, while promoting safety and efficiency in transportation and other fields.

Commercial Remote Sensing, March 1994
The Clinton Administration recognized the value of commercial and international capabilities in remote sensing from space to support scientific, industrial, government, and commercial users. The goal of the Administration□,s policy is to support and enhance U.S. industrial competitiveness while protecting U.S. national security and foreign policy interests. The Administration established a case-by-case review process□*including specific conditions□*for proposals to license the operation of U.S. private remote sensing space systems, to transfer advanced remote sensing capabilities, or to transfer sensitive technology under government-to-government agreements.

The environment created by President Clinton□,s comprehensive space policies has enabled and advanced a number of significant space programs and activities to further the Administration□,s goals and priorities for the civil, national security, and commercial sectors. Significantly, on the basis of this stable and predictable policy environment, the U.S. commercial space sector has recently made substantial private investments to develop new capabilities and expand capacity to address unprecedented growth in demand for a variety of telecommunication services for customers across the United States and around the world.

Clinton Administration Space Programs and Initiatives: Significant Accomplishments

America□,s accomplishments in space under the Clinton Administration span a range of civil, commercial, and national security programs that support hundreds of thousands of high-tech, high-wage jobs across the country. Emerging applications developed by the commercial space sector promise to continue expanding the value of space activities to our national economy and prosperity. U.S. space capabilities have continued to provide unparalleled contributions to the national security of the United States. Specific highlights of U.S. space accomplishments under the Clinton Administration include:

International Space Station
Under President Clinton□,s leadership, NASA welcomed Russia into the 13-nation partnership, making the International Space Station program the largest international scientific cooperative project in history. During the five years since the Clinton Administration□,s 1993 redesign, the U.S. and foreign partners have built over 400,000 pounds of flight hardware and the first elements are scheduled for launch and assembly in orbit on November 20 and December 3, 1998.

The five-year, nine-mission Shuttle-Mir experience gave us invaluable experience in international space operations, while reducing health and safety risks for future astronauts who will fly on the International Space Station. By the time the seventh and final U.S. crew member returned after a long-duration stay, U.S. astronauts had spent 919 days in space aboard the Mir space station. This exceeds by almost five months the total time accumulated in orbit during more than 90 Shuttle flights since the beginning of the Shuttle program in 1981.

Space Transportation
In 1994, the Clinton Administration announced a strategy to pursue low-cost access to space. In October 1998, government and industry announced the design□*and $3 billion in government contract awards matched by $2 billion in private investment□*to develop and fly two families of Evolved Expendable Launch Vehicles (EELVs) that will reduce launch costs by 25 to 50 percent over the next 20 years, facilitating access to space for both commercial and government payloads well into the next century.

NASA is at work with its industry partners to build and fly reusable launch vehicle technology demonstration vehicles under a government-industry program with a goal of reducing launch costs by a factor of ten within ten years. NASA has committed more than $900 million to the X-33 program, along with more than $200 million in private investment. Both the X-33 and the smaller X-34 well into their construction phase, and both are scheduled for test flights next year.

Since 1992, NASA has made major strides to improve the safety and reliability of the Space Shuttle system, as well as its operational efficiency. Through a series of technical and process improvements, NASA has significantly reduced risks by improving the design of the Space Shuttle Main Engine, conducted 16 consecutive launches over the past two years within the first five minutes of the launch window (excluding weather scrubs), and reduced the average number of in-flight anomalies by a factor of three since 1992. At the same time, operational efficiencies and performance improvements have combined to cut by half the cost per pound of payload delivered to orbit.

Space Science and Origins Initiative
Since the first Hubble repair mission in 1993, Americans and people the world over have been astounded and inspired by an amazing succession of Hubble Space Telescope images that deepen and challenge our understanding of the universe in ways we could not have imagined even ten years ago. NASA□,s Mars Pathfinder and Sojourner rover likewise captured the imagination of people around the world during their mission of discovery in the summer of 1997. NASA□,s Lunar Prospector has detected evidence to suggest the presence of ice on the moon. Galileo□,s images and discoveries in the Jupiter system suggest that there may be oceans on one of Jupiter□,s moons, Europa. And over the past few years, scientists from around the world have detected evidence for more than 20 planets around other stars in our galaxy□*establishing the foundation for the Administration□,s $900 million Origins initiative to detect and character ize planetary systems beyond our solar system.

Under President Clinton, NASA has revolutionized space exploration by replacing large, complex spacecraft with smaller, □&faster, better, cheaper,□8 and more frequent missions with shorter development times. This new approach to space exploration has allowed NASA to cut average development costs by more than half while almost doubling the number and frequency of Earth and space science missions.

Exploring Planet Earth
Space-based Earth observation provides a wealth of valuable information for the protection of public health, safety, and national security. Acknowledging the need for efficient operation of earth observation systems, President Clinton directed the development and operation of a LANDSAT 7 system under the coordination of NASA, NOAA, and USGS. In order to reduce redundancy in the operation of space-based observation systems, the Administration established a single, converged National Polar-Orbiting Environmental Satellite System (NPOESS), which activated a common ground station to control both DoD and NOAA weather satellites in 1997. These programs, along with other NASA Earth Science and NOAA satellite missions, give us powerful new tools for analyzing weather, and for long-term prediction of floods, drought, violent storms, and other natural occurrences like El Ni□o and La Ni□a phenomena and variations in the ozone hole over Antarctica. They also give us fundamental new insights into how human activities may have profound effects on our planet.

GPS
In March, 1996, the Clinton Administration announced a new policy for the use and management of the United States Global Positioning System (GPS), a service that is offered free of charge to U.S. allied and military forces and civilian users all over the world. Recognizing that GPS is rapidly becoming a crucial component of the Global Information Infrastructure, offering a wide range of important applications in areas such as navigation, global change research, and mapping, President Clinton has outlined a policy that aims to balance both national security and commercial interests. As demand grows for GPS services among civil users, the Administration is devising a way to ensure adequate civil access to GPS while protecting precise positioning service for authorized military users.

Commercial Space Activities
In addition to the private investments U.S. industry has made to reduce launch costs through cooperative programs with government agencies, private investors have also committed well over $1 billion toward the development of new commercial launch systems and international partnerships aimed at addressing global demand for commercial satellite

launches. State governments and private entities have also built and started operating their own private launch sites in the past few years. Commercial launch demand has doubled since 1992, and commercial launches now outpace U.S. government launch rates for expendable vehicles.

The commercial sector is also rapidly developing new space-based capabilities, including global, mobile messaging, data transfer, and cellular phone services. The first wave of these capabilities is already built and operating, and the next wave, including high-speed Internet access from any point on Earth, is in development. The Clinton Administration□,s stable and predictable commercial space policy environment contributed to the ability of U.S. industry to develop and field these new space capabilities which promise to improve life on Earth.

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Lisa J. Levin (CN=Lisa J. Levin/OU=WHO/O=EOP [WHO])

CREATION DATE/TIME:28-OCT-1998 19:25:19.00

SUBJECT: here's some info. call me

TO: brian_turetsky (brian_turetsky @ hud.gov @ INET [UNKNOWN])
READ:UNKNOWN

TEXT:
STS-95 MISSION OVERVIEW

More than thirty six years after he made history as the first American to orbit the Earth, Senator John H. Glenn, Jr. will return to space as part of a multi-national crew with the launch of the Space Shuttle Discovery October 29, 1998. STS-95, will involve more than 80 scientific experiments investigating mysteries that span the realm from the inner universe of the human body to studies of our own Sun and its solar activity.

On February 20, 1962, when Glenn flew in his Friendship 7 Mercury capsule, the largest mystery facing the young NASA space program was whether humans could even survive in the hostile environment of space. In the 121 U.S. space missions since Glenn□,s flight, more than 200 Americans have flown in space. Glenn, who inspired many current astronauts to pursue space flight as a career, continues to inspire people of all generations as he returns to space.

In addition to Senator Glenn, the STS-95 crew includes a Japanese astronaut, Dr. Chiaki Mukai, making her second flight, and Pedro Duque, who will be the first Spanish national to fly in space.

The wealth of scientific data accumulated during these space flights validate apparent similarities between the effects of space flight and aging. Glenn will be a test subject for specific investigations which mimic the effect of aging, including loss of muscle mass and bone density, disrupted sleep patterns, a depressed immune system, and loss of balance.

Scientific endeavors on the STS-95 mission will also expand our understanding of the Sun and how it affects life on Earth. The Spartan 201 spacecraft will be released by the crew on the fourth day of the mission and will spend two days studying the solar corona, the solar wind, and how the solar wind affects activities in Earth-orbit and on the ground. The Sun drives our weather, and energetic eruptions on the Sun are capable of disrupting satellites and communication and power systems on Earth. After two days of solar observations, Discovery□,s crew will haul the spacecraft back into the Shuttle□,s cargo bay and return it to Earth.

Six astronomical instruments comprise the International Extreme Ultraviolet Hitchhiker Experiment (IEH-3) which will be carried in Discovery□,s payload bay. These instruments support experiments involving studies of stars, remnants of supernovae, and star formation. Discovery will carry a variety of materials and equipment for use during the third Hubble Space Telescope servicing mission, currently scheduled for mid-2000, as well as a Spacehab module. Inside Spacehab, almost 30 smaller experiments ranging from materials science, to plant growth, to developing new techniques for delivering anti-tumor medications, will be

conducted by the astronauts. Sponsored by NASA, the Canadian Space Agency, the European Space Agency, and the Japanese Space Agency (NASDA), these studies take the best advantage of the unique environment of space to conduct these diverse studies.

The STS-95 mission is scheduled to last almost 9 days. A launch on October 29 and nominal mission duration would have Discovery landing back at Kennedy Space Center after its 3 « million mile journey on November 7, at about 12 noon Eastern Standard Time. STS-95 will be the 25th flight of the Space Shuttle Discovery and the 92nd mission flown since the start of the Space Shuttle program in April 1981.

ASTRONAUT BIOGRAPHICAL SKETCHES

Lt. Col. Curis L. Brown, USAF □) STS-95 Commander Brown is an Air Force Academy graduate who has logged over 977 hours in space. He was selected as an astronaut candidate in June 1987, and has worked on Shuttle upgrades and operations. This will be Brown□,s fifth flight on the Shuttle. He is unmarried and has one son, Greg.

Lt. Col. Steve Lindsey, USAF □) STS-95 Pilot Lindsey is an Air Force Academy graduate who has logged over 3,300 hours of flying time in 50 different types of aircraft. He became a NASA astronaut in 1996, and has worked on weapons systems for military aircraft and upgrades for the Shuttle. STS-95 will be Lindsey□,s second space flight. He and his wife Diane have three children: Jessica (11), Jason (8), and Jillian (5).

Dr. Stephen Robinson □) STS-95 Mission Specialist Prior to his selection as an astronaut in December 1994, Dr. Robinson was responsible for a number of NASA aerodynamics and engineering research projects. This will be his second space mission. During Dr. Robinson□,s first STS mission in 1997, he logged over 284 hours in space. Robinson is unmarried.

Dr. Scott Parazynski □) STS-95 Mission Specialist A medical doctor by training, Parazynski has conducted extensive research on human adaptation to stressful environments. He has logged over 521 hours in space, including 5 hours of extravehicular activity (EVA). This will be Parazynski□,s third flight, where he will serve as the flight engineer. He and his wife, Gail, have one son, Luke (2).

Pedro Duque □) STS-95 Mission Specialist (European Space Agency) Duque joined ESA□,s astronaut corps in 1992 following several years of orbital determination work in Germany. Duque was trained as a research astronaut (back-up crew) for Soyuz and Mir and supported the joint ESA-Russian EUROMIR 94 and 95 missions. Duque will become the first Spanish national to fly in space. Duque and his wife, Consuelo, have three children: Andres, Irene, and Marc.

Chiaki Mukai □) STS-95 Payload Specialist (NASDA Astronaut) A cardiovascular surgeon, Mukai became the first Japanese female to fly in space on the STS-65 mission in 1984, when she logged over 353 hours in space. This will be her second flight. Mukai and her husband, Makio, have no children.

John H. Glenn □) STS-95 Payload Specialist Senator Glenn piloted the Mercury-6 (Friendship 7) spacecraft on the first manned orbital mission by the United States. He has logged nearly 9,000 hours of flying time, and 5 hours in space. This will be Glenn□,s second space flight.

Col. Robert Cabana, USMC □) STS-88 Commander Cabana will command the

first U.S. assembly mission for the International Space Station on December 3, 1998, mating the U.S. Unity Node to the Russian Zarya module (the first element of the Station) which is scheduled for a Russian launch on November 20, 1998. Since 1990, he has flown three space missions. He has over 353 hours in space and over 5,000 hours in 33 types of aircraft. He and Collins will view the launch with you.

Lt. Col. Eileen Collins, USAF □) STS-93 Commander Collins will be the first woman to command a Space Shuttle mission, STS-93, scheduled for launch aboard Columbia in March 1999, to deploy the AXAF spacecraft□*an X-ray telescope. In 1995, she became the first woman Shuttle pilot during the first rendezvous mission with the Russian space station, Mir. She also flew a Mir docking mission in 1997. Collins has logged over 419 hours in space and has over 5,000 hours in 30 types of aircraft.

MERCURY/FRIENDSHIP 7 AND SHUTTLE DISCOVERY/STS-95 COMPARISON

Mercury Capsule	
Name	Friendship 7 (one flight)
Orbits	3 orbits
Duration	4 hours, 55 min., 23 sec.
Distance Flown	75,679 statute miles
Maximum G□,s	7.7
Payload	None
Total individual Spacecraft mileage	75,679 statute miles (one mission)
Weight	4256.34 lbs, 2657.6 lbs. at reentry
Lift-off thrust	360,000 lbs. (Atlas Launch Vehicle)
Crew Size	1
Volume (habitable)	36 ft3

Interior environment Glenn was restrained by his couch harness assembly and by the limited space in the interior. Only one stowage compartment was available. Other items were stowed in bags, in pouches, or on specific attachments to the interior.

Discovery Orbiter	
Name	Discovery (23 flights as of 2/98)
Orbits	Approximately 144 orbits for STS-95
Duration	Approximately 8 days, 20 hours
Distance Flown	Approximately 3,600,000 miles

Maximum G□,s 3

Payload Spacehab Research Module; Hubble Orbital Systems Test Platform; SPARTAN-201-05 Reflight; International Extreme Ultraviolet Hitchhiker; Getaway Special Canisters

Total individual Spacecraft mileage 68,837,819 statute miles (23 Discovery orbiter missions)

Weight 153,819 lbs. (Orbiter empty but with three Space Shuttle Main Engines)

Lift-off thrust 7,000,000 lbs. (Space Shuttle Main Engines and Solid Rocket Boosters)

Crew Size 2-7

Volume (habitable) Crew compartment of 2,325 ft3 (332 ft3 per crew member)

Interior environment During ascent and descent the crew members are strapped into seats on either the flight deck or the middeck. The flight deck will hold four persons, while the middeck is usually equipped for three. (STS-71 Atlantis brought eight members down, four on each deck.) On orbit, crew members have a free range of movement throughout the crew compartment, as well as the Spacehab in the payload bay.

FACT SHEET

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For four decades, the United States has led the world in the exploration and use of outer space. Our achievements in space have inspired a generation of Americans and people throughout the world. President Clinton believes that we should maintain this leadership through a strong, stable, and balanced national space program based on revolutionary new partnerships with the private sector and with other spacefaring nations. Our space activities represent a critical investment in America□,s 21st century economy. Maintaining our leadership role in space will serve national security, foreign policy, and economic goals. To that end, the Clinton Administration has vigorously supported policies and programs designed to cut costs, increase efficiency, and spur scientific and technological advancement.

Transforming NASA into a High-Payoff Research and Development Agency

In 1992, NASA□,s budget request for fiscal year 1993 was $15 billion and its budget plan assumed growth to $21 billion by FY 1998. In fiscal year 1991, only one-third of NASA□,s budget was devoted to the sciences and aerospace technology. NASA was criticized as having a bloated bureaucracy, employing too many civil servants (25,000), and pursuing missions that were too ambitious, too expensive, and took too long to develop. During that period, NASA was launching only two Earth and Space Science spacecraft each year, with an average cost of $590 million and an

eight-year development time.

In 1998, NASA is regarded as a transformed agency. NASA has been a leader in the reinvention of Government process. NASA□,s annual budgets have been in the $13 to $14 billion range in recent years and its civil service workforce is under 18,000, with its headquarters staffing at about half its 1992 level. The percentage of the NASA budget devoted to the sciences and aerospace technology has increased to 42%, even though the total amount appropriated to NASA by Congress for fiscal year 1998 ($13.6 billion) is $650 million less than fiscal year 1993's appropriation. Compared to 1991, NASA is now launching an average of eight spacecraft per year versus two, while developing them at one third the cost and in half the time. The cost of Space Shuttle flights is down by more than a third and all safety indicators are significantly improved. The NASA workforce continues to be redeployed from doing the day-to-day management of spaceflight operations into research and technology.

Clinton Administration Space Policies: The Foundation for Progress

Over the past six years, the Clinton Administration has established and implemented a series of space policies to address a broad range of civil, national security, and commercial activities. These policies are based on the cumulative experience of the United States in space, they recognize the current domestic and international environments□*most importantly, the end of the Cold War□*and they reflect the growing maturity of U.S. government, commercial, and international space capabilities. These policies explain major Administration initiatives, goals, and priorities; they establish and enable U.S. government agency roles and activities; and they recognize the interactions among the four space sectors□*civil, military, intelligence, and commercial.

National Space Policy (PDD/NSTC□)8), September 1996
The Clinton Administration□,s overarching national space policy establishes the goals and priorities for America□,s activities in space. America□,s space program enhances knowledge of the Earth, solar system and universe through human and robotic exploration; strengthens U.S. national security; enhances economic competitiveness and scientific and technical capabilties of the U.S.; encourages commercial use of space; and promotes international cooperation to further U.S. domestic, national security, and foreign policies.

Convergence of U.S. Polar Orbiting Weather Satellites (PDD/NSTC□)2), May 1994
President Clinton has taken the initiative to integrate the military and civil polar orbiting weather satellite programs into a single system□*the National Polar Orbiting Environmental Satellite System (NPOESS)□*designed to continue satisfying operational requirements while reducing development and operating costs.

LANDSAT Remote Sensing Strategy (PDD/NSTC□)3), May 1994
President Clinton has pursued the continuance of the LANDSAT 7 program, assuring the continuity of more than 20 years of calibrated LANDSAT-type and quality of earth remote sensing data for civil, commercial, scientific, and environmental uses, while reducing the risk of a data gap.

National Space Transportation Policy (PDD/NSTC□)4), August 1994
President Clinton clearly assigned responsibility for expendable launch vehicle technology and development to the Department of Defense, while assigning NASA the lead responsibility for developing and demonstrating technologies to enable a decision regarding development of a

next-generation reusable launch vehicle. He also reinforced the long-standing, stable policy environment regarding U.S. government support for U.S. commercial space launch activities.

U.S. Global Positioning System Policy (PDD/NSTC-6), March 1996
The Clinton Administration established a strategic vision for the future management and use of GPS, addressing a broad range of military, civil, commercial, and scientific interests, both national and international. A key goal is to encourage the acceptance and integration of GPS into peaceful civil, commercial, and scientific applications worldwide, while promoting safety and efficiency in transportation and other fields.

Commercial Remote Sensing, March 1994
The Clinton Administration recognized the value of commercial and international capabilities in remote sensing from space to support scientific, industrial, government, and commercial users. The goal of the Administration□,s policy is to support and enhance U.S. industrial competitiveness while protecting U.S. national security and foreign policy interests. The Administration established a case-by-case review process□*including specific conditions□*for proposals to license the operation of U.S. private remote sensing space systems, to transfer advanced remote sensing capabilities, or to transfer sensitive technology under government-to-government agreements.

The environment created by President Clinton□,s comprehensive space policies has enabled and advanced a number of significant space programs and activities to further the Administration□,s goals and priorities for the civil, national security, and commercial sectors. Significantly, on the basis of this stable and predictable policy environment, the U.S. commercial space sector has recently made substantial private investments to develop new capabilities and expand capacity to address unprecedented growth in demand for a variety of telecommunication services for customers across the United States and around the world.

Clinton Administration Space Programs and Initiatives: Significant Accomplishments

America□,s accomplishments in space under the Clinton Administration span a range of civil, commercial, and national security programs that support hundreds of thousands of high-tech, high-wage jobs across the country. Emerging applications developed by the commercial space sector promise to continue expanding the value of space activities to our national economy and prosperity. U.S. space capabilities have continued to provide unparalleled contributions to the national security of the United States. Specific highlights of U.S. space accomplishments under the Clinton Administration include:

International Space Station
Under President Clinton□,s leadership, NASA welcomed Russia into the 13-nation partnership, making the International Space Station program the largest international scientific cooperative project in history. During the five years since the Clinton Administration□,s 1993 redesign, the U.S. and foreign partners have built over 400,000 pounds of flight hardware and the first elements are scheduled for launch and assembly in orbit on November 20 and December 3, 1998.

The five-year, nine-mission Shuttle-Mir experience gave us invaluable experience in international space operations, while reducing health and safety risks for future astronauts who will fly on the International Space Station. By the time the seventh and final U.S. crew member returned

after a long-duration stay, U.S. astronauts had spent 919 days in space aboard the Mir space station. This exceeds by almost five months the total time accumulated in orbit during more than 90 Shuttle flights since the beginning of the Shuttle program in 1981.

Space Transportation
In 1994, the Clinton Administration announced a strategy to pursue low-cost access to space. In October 1998, government and industry announced the design□*and $3 billion in government contract awards matched by $2 billion in private investment□*to develop and fly two families of Evolved Expendable Launch Vehicles (EELVs) that will reduce launch costs by 25 to 50 percent over the next 20 years, facilitating access to space for both commercial and government payloads well into the next century.

NASA is at work with its industry partners to build and fly reusable launch vehicle technology demonstration vehicles under a government-industry program with a goal of reducing launch costs by a factor of ten within ten years. NASA has committed more than $900 million to the X-33 program, along with more than $200 million in private investment. Both the X-33 and the smaller X-34 well into their construction phase, and both are scheduled for test flights next year.

Since 1992, NASA has made major strides to improve the safety and reliability of the Space Shuttle system, as well as its operational efficiency. Through a series of technical and process improvements, NASA has significantly reduced risks by improving the design of the Space Shuttle Main Engine, conducted 16 consecutive launches over the past two years within the first five minutes of the launch window (excluding weather scrubs), and reduced the average number of in-flight anomalies by a factor of three since 1992. At the same time, operational efficiencies and performance improvements have combined to cut by half the cost per pound of payload delivered to orbit.

Space Science and Origins Initiative
Since the first Hubble repair mission in 1993, Americans and people the world over have been astounded and inspired by an amazing succession of Hubble Space Telescope images that deepen and challenge our understanding of the universe in ways we could not have imagined even ten years ago. NASA□,s Mars Pathfinder and Sojourner rover likewise captured the imagination of people around the world during their mission of discovery in the summer of 1997. NASA□,s Lunar Prospector has detected evidence to suggest the presence of ice on the moon. Galileo□,s images and discoveries in the Jupiter system suggest that there may be oceans on one of Jupiter□,s moons, Europa. And over the past few years, scientists from around the world have detected evidence for more than 20 planets around other stars in our galaxy□*establishing the foundation for the Administration□,s $900 million Origins initiative to detect and characterize planetary systems beyond our solar system.

Under President Clinton, NASA has revolutionized space exploration by replacing large, complex spacecraft with smaller, □&faster, better, cheaper,□8 and more frequent missions with shorter development times. This new approach to space exploration has allowed NASA to cut average development costs by more than half while almost doubling the number and frequency of Earth and space science missions.

Exploring Planet Earth
Space-based Earth observation provides a wealth of valuable information for the protection of public health, safety, and national security. Acknowledging the need for efficient operation of earth observation

systems, President Clinton directed the development and operation of a LANDSAT 7 system under the coordination of NASA, NOAA, and USGS. In order to reduce redundancy in the operation of space-based observation systems, the Administration established a single, converged National Polar-Orbiting Environmental Satellite System (NPOESS), which activated a common ground station to control both DoD and NOAA weather satellites in 1997. These programs, along with other NASA Earth Science and NOAA satellite missions, give us powerful new tools for analyzing weather, and for long-term prediction of floods, drought, violent storms, and other natural occurrences like El Ni□o and La Ni□a phenomena and variations in the ozone hole over Antarctica. They also give us fundamental new insights into how human activities may have profound effects on our planet.

GPS
In March, 1996, the Clinton Administration announced a new policy for the use and management of the United States Global Positioning System (GPS), a service that is offered free of charge to U.S. allied and military forces and civilian users all over the world. Recognizing that GPS is rapidly becoming a crucial component of the Global Information Infrastructure, offering a wide range of important applications in areas such as navigation, global change research, and mapping, President Clinton has outlined a policy that aims to balance both national security and commercial interests. As demand grows for GPS services among civil users, the Administration is devising a way to ensure adequate civil access to GPS while protecting precise positioning service for authorized military users.

Commercial Space Activities
In addition to the private investments U.S. industry has made to reduce launch costs through cooperative programs with government agencies, private investors have also committed well over $1 billion toward the development of new commercial launch systems and international partnerships aimed at addressing global demand for commercial satellite launches. State governments and private entities have also built and started operating their own private launch sites in the past few years. Commercial launch demand has doubled since 1992, and commercial launches now outpace U.S. government launch rates for expendable vehicles.

The commercial sector is also rapidly developing new space-based capabilities, including global, mobile messaging, data transfer, and cellular phone services. The first wave of these capabilities is already built and operating, and the next wave, including high-speed Internet access from any point on Earth, is in development. The Clinton Administration□,s stable and predictable commercial space policy environment contributed to the ability of U.S. industry to develop and field these new space capabilities which promise to improve life on Earth.

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Nanda Chitre@EOP@LNGTWY@LNGTWY (Nanda Chitre@EOP@LNGTWY@LNGTWY [WHO])

CREATION DATE/TIME:28-OCT-1998 12:25:37.00

SUBJECT: Fact Sheet on Space Accomplishments

TO: Estela Mendoza@eop (Estela Mendoza@eop [WHO])
READ:UNKNOWN

TO: Mark J. Bernstein@eop (Mark J. Bernstein@eop [WHO])
READ:UNKNOWN

TO: Philip J. Crowley@eop (Philip J. Crowley@eop [NSC])
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TEXT:
Message Creation Date was at 28-OCT-1998 12:14:00

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Jefferson Hofgard
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To: See the distribution list at the bottom of this message
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Subject: Fact Sheet on Space Accomplishments

Here is the fact sheet on accomplishments. This was cleared by NASA and OMB.
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Victor J. Villhard
10/28/98 12:11:26 PM
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To: Jefferson Hofgard/OSTP/EOP
cc:
Subject: Fact Sheet on Space Accomplishments

FACT SHEET

CLINTON ADMINISTRATION SPACE ACCOMPLISHMENTS

The U.S. Space Program: A Long-term Investment in America□!,s Future

For four decades, the United States has led the world in the exploration and

use of outer space. Our achievements in space have inspired a generation of Americans and people throughout the world. President Clinton believes that we should maintain this leadership through a strong, stable, and balanced national space program based on revolutionary new partnerships with the private sector and with other spacefaring nations. Our space activities represent a critical investment in America□!,s 21st century economy. Maintaining our leadership role in space will serve national security, foreign policy, and economic goals. To that end, the Clinton Administration has vigorously supported policies and programs designed to cut costs, increase efficiency, and spur scientific and technological advancement.

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including global, mobile messaging, data transfer, and cellular phone services. The first wave of these capabilities is already built and operating,
and the next wave, including high-speed Internet access from any point on Earth, is in development. The Clinton Administration□!,s stable and predictable
commercial space policy environment contributed to the ability of U.S. industry
to develop and field these new space capabilities which promise to improve life
on Earth.

Message Sent
To:
Jennifer M. Palmieri/WHO/EOP
Nanda Chitre/WHO/EOP
Mark D. Neschis/WHO/EOP
Jeffrey M. Smith/OSTP/EOP
Jeffrey A. Forbes/WHO/EOP

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Lisa J. Levin (CN=Lisa J. Levin/OU=WHO/O=EOP [WHO])

CREATION DATE/TIME:28-OCT-1998 19:25:19.00

SUBJECT: here's some info. call me

TO: brian_turetsky (brian_turetsky @ hud.gov @ INET [UNKNOWN])
READ:UNKNOWN

TEXT:
STS-95 MISSION OVERVIEW

More than thirty six years after he made history as the first American to orbit the Earth, Senator John H. Glenn, Jr. will return to space as part of a multi-national crew with the launch of the Space Shuttle Discovery October 29, 1998. STS-95, will involve more than 80 scientific experiments investigating mysteries that span the realm from the inner universe of the human body to studies of our own Sun and its solar activity.

On February 20, 1962, when Glenn flew in his Friendship 7 Mercury capsule, the largest mystery facing the young NASA space program was whether humans could even survive in the hostile environment of space. In the 121 U.S. space missions since Glenn□,s flight, more than 200 Americans have flown in space. Glenn, who inspired many current astronauts to pursue space flight as a career, continues to inspire people of all generations as he returns to space.

In addition to Senator Glenn, the STS-95 crew includes a Japanese astronaut, Dr. Chiaki Mukai, making her second flight, and Pedro Duque, who will be the first Spanish national to fly in space.

The wealth of scientific data accumulated during these space flights validate apparent similarities between the effects of space flight and aging. Glenn will be a test subject for specific investigations which mimic the effect of aging, including loss of muscle mass and bone density, disrupted sleep patterns, a depressed immune system, and loss of balance.

Scientific endeavors on the STS-95 mission will also expand our understanding of the Sun and how it affects life on Earth. The Spartan 201 spacecraft will be released by the crew on the fourth day of the mission and will spend two days studying the solar corona, the solar wind, and how the solar wind affects activities in Earth-orbit and on the ground. The Sun drives our weather, and energetic eruptions on the Sun are capable of disrupting satellites and communication and power systems on Earth. After two days of solar observations, Discovery□,s crew will haul the spacecraft back into the Shuttle□,s cargo bay and return it to Earth.

Six astronomical instruments comprise the International Extreme Ultraviolet Hitchhiker Experiment (IEH-3) which will be carried in Discovery□,s payload bay. These instruments support experiments involving studies of stars, remnants of supernovae, and star formation. Discovery will carry a variety of materials and equipment for use during the third Hubble Space Telescope servicing mission, currently scheduled for mid-2000, as well as a Spacehab module. Inside Spacehab, almost 30 smaller experiments ranging from materials science, to plant growth, to developing new techniques for delivering anti-tumor medications, will be

conducted by the astronauts. Sponsored by NASA, the Canadian Space Agency, the European Space Agency, and the Japanese Space Agency (NASDA), these studies take the best advantage of the unique environment of space to conduct these diverse studies.

The STS-95 mission is scheduled to last almost 9 days. A launch on October 29 and nominal mission duration would have Discovery landing back at Kennedy Space Center after its 3 « million mile journey on November 7, at about 12 noon Eastern Standard Time. STS-95 will be the 25th flight of the Space Shuttle Discovery and the 92nd mission flown since the start of the Space Shuttle program in April 1981.

ASTRONAUT BIOGRAPHICAL SKETCHES

Lt. Col. Curis L. Brown, USAF □) STS-95 Commander Brown is an Air Force Academy graduate who has logged over 977 hours in space. He was selected as an astronaut candidate in June 1987, and has worked on Shuttle upgrades and operations. This will be Brown□,s fifth flight on the Shuttle. He is unmarried and has one son, Greg.

Lt. Col. Steve Lindsey, USAF □) STS-95 Pilot Lindsey is an Air Force Academy graduate who has logged over 3,300 hours of flying time in 50 different types of aircraft. He became a NASA astronaut in 1996, and has worked on weapons systems for military aircraft and upgrades for the Shuttle. STS-95 will be Lindsey□,s second space flight. He and his wife Diane have three children: Jessica (11), Jason (8), and Jillian (5).

Dr. Stephen Robinson □) STS-95 Mission Specialist Prior to his selection as an astronaut in December 1994, Dr. Robinson was responsible for a number of NASA aerodynamics and engineering research projects. This will be his second space mission. During Dr. Robinson□,s first STS mission in 1997, he logged over 284 hours in space. Robinson is unmarried.

Dr. Scott Parazynski □) STS-95 Mission Specialist A medical doctor by training, Parazynski has conducted extensive research on human adaptation to stressful environments. He has logged over 521 hours in space, including 5 hours of extravehicular activity (EVA). This will be Parazynski□,s third flight, where he will serve as the flight engineer. He and his wife, Gail, have one son, Luke (2).

Pedro Duque □) STS-95 Mission Specialist (European Space Agency) Duque joined ESA□,s astronaut corps in 1992 following several years of orbital determination work in Germany. Duque was trained as a research astronaut (back-up crew) for Soyuz and Mir and supported the joint ESA-Russian EUROMIR 94 and 95 missions. Duque will become the first Spanish national to fly in space. Duque and his wife, Consuelo, have three children: Andres, Irene, and Marc.

Chiaki Mukai □) STS-95 Payload Specialist (NASDA Astronaut) A cardiovascular surgeon, Mukai became the first Japanese female to fly in space on the STS-65 mission in 1984, when she logged over 353 hours in space. This will be her second flight. Mukai and her husband, Makio, have no children.

John H. Glenn □) STS-95 Payload Specialist Senator Glenn piloted the Mercury-6 (Friendship 7) spacecraft on the first manned orbital mission by the United States. He has logged nearly 9,000 hours of flying time, and 5 hours in space. This will be Glenn□,s second space flight.

Col. Robert Cabana, USMC □) STS-88 Commander Cabana will command the

first U.S. assembly mission for the International Space Station on December 3, 1998, mating the U.S. Unity Node to the Russian Zarya module (the first element of the Station) which is scheduled for a Russian launch on November 20, 1998. Since 1990, he has flown three space missions. He has over 353 hours in space and over 5,000 hours in 33 types of aircraft. He and Collins will view the launch with you.

Lt. Col. Eileen Collins, USAF □) STS-93 Commander Collins will be the first woman to command a Space Shuttle mission, STS-93, scheduled for launch aboard Columbia in March 1999, to deploy the AXAF spacecraft□*an X-ray telescope. In 1995, she became the first woman Shuttle pilot during the first rendezvous mission with the Russian space station, Mir. She also flew a Mir docking mission in 1997. Collins has logged over 419 hours in space and has over 5,000 hours in 30 types of aircraft.

MERCURY/FRIENDSHIP 7 AND SHUTTLE DISCOVERY/STS-95 COMPARISON

Mercury Capsule Name	Friendship 7 (one flight)
Orbits	3 orbits
Duration	4 hours, 55 min., 23 sec.
Distance Flown	75,679 statute miles
Maximum G□,s	7.7
Payload	None
Total individual Spacecraft mileage	75,679 statute miles (one mission)
Weight	4256.34 lbs, 2657.6 lbs. at reentry
Lift-off thrust	360,000 lbs. (Atlas Launch Vehicle)
Crew Size	1
Volume (habitable)	36 ft3

Interior environment Glenn was restrained by his couch harness assembly and by the limited space in the interior. Only one stowage compartment was available. Other items were stowed in bags, in pouches, or on specific attachments to the interior.

Discovery Orbiter	
Name	Discovery (23 flights as of 2/98)
Orbits	Approximately 144 orbits for STS-95
Duration	Approximately 8 days, 20 hours
Distance Flown	Approximately 3,600,000 miles

Maximum G□,s	3
Payload	Spacehab Research Module; Hubble Orbital Systems Test Platform; SPARTAN-201-05 Reflight; International Extreme Ultraviolet Hitchhiker; Getaway Special Canisters
Total individual Spacecraft mileage	68,837,819 statute miles (23 Discovery orbiter missions)
Weight	153,819 lbs. (Orbiter empty but with three Space Shuttle Main Engines)
Lift-off thrust	7,000,000 lbs. (Space Shuttle Main Engines and Solid Rocket Boosters)
Crew Size	2-7
Volume (habitable)	Crew compartment of 2,325 ft3 (332 ft3 per crew member)
Interior environment	During ascent and descent the crew members are strapped into seats on either the flight deck or the middeck. The flight deck will hold four persons, while the middeck is usually equipped for three. (STS-71 Atlantis brought eight members down, four on each deck.) On orbit, crew members have a free range of movement throughout the crew compartment, as well as the Spacehab in the payload bay.

FACT SHEET

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For four decades, the United States has led the world in the exploration and use of outer space. Our achievements in space have inspired a generation of Americans and people throughout the world. President Clinton believes that we should maintain this leadership through a strong, stable, and balanced national space program based on revolutionary new partnerships with the private sector and with other spacefaring nations. Our space activities represent a critical investment in America□,s 21st century economy. Maintaining our leadership role in space will serve national security, foreign policy, and economic goals. To that end, the Clinton Administration has vigorously supported policies and programs designed to cut costs, increase efficiency, and spur scientific and technological advancement.

Transforming NASA into a High-Payoff Research and Development Agency

In 1992, NASA□,s budget request for fiscal year 1993 was $15 billion and its budget plan assumed growth to $21 billion by FY 1998. In fiscal year 1991, only one-third of NASA□,s budget was devoted to the sciences and aerospace technology. NASA was criticized as having a bloated bureaucracy, employing too many civil servants (25,000), and pursuing missions that were too ambitious, too expensive, and took too long to develop. During that period, NASA was launching only two Earth and Space Science spacecraft each year, with an average cost of $590 million and an

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The environment created by President Clinton□,s comprehensive space policies has enabled and advanced a number of significant space programs and activities to further the Administration□,s goals and priorities for the civil, national security, and commercial sectors. Significantly, on the basis of this stable and predictable policy environment, the U.S. commercial space sector has recently made substantial private investments to develop new capabilities and expand capacity to address unprecedented growth in demand for a variety of telecommunication services for customers across the United States and around the world.

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America□,s accomplishments in space under the Clinton Administration span a range of civil, commercial, and national security programs that support hundreds of thousands of high-tech, high-wage jobs across the country. Emerging applications developed by the commercial space sector promise to continue expanding the value of space activities to our national economy and prosperity. U.S. space capabilities have continued to provide unparalleled contributions to the national security of the United States. Specific highlights of U.S. space accomplishments under the Clinton Administration include:

International Space Station
Under President Clinton□,s leadership, NASA welcomed Russia into the 13-nation partnership, making the International Space Station program the largest international scientific cooperative project in history. During the five years since the Clinton Administration□,s 1993 redesign, the U.S. and foreign partners have built over 400,000 pounds of flight hardware and the first elements are scheduled for launch and assembly in orbit on November 20 and December 3, 1998.

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after a long-duration stay, U.S. astronauts had spent 919 days in space aboard the Mir space station. This exceeds by almost five months the total time accumulated in orbit during more than 90 Shuttle flights since the beginning of the Shuttle program in 1981.

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NASA is at work with its industry partners to build and fly reusable launch vehicle technology demonstration vehicles under a government-industry program with a goal of reducing launch costs by a factor of ten within ten years. NASA has committed more than $900 million to the X-33 program, along with more than $200 million in private investment. Both the X-33 and the smaller X-34 well into their construction phase, and both are scheduled for test flights next year.

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Under President Clinton, NASA has revolutionized space exploration by replacing large, complex spacecraft with smaller, □&faster, better, cheaper,□8 and more frequent missions with shorter development times. This new approach to space exploration has allowed NASA to cut average development costs by more than half while almost doubling the number and frequency of Earth and space science missions.

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Commercial Space Activities

In addition to the private investments U.S. industry has made to reduce launch costs through cooperative programs with government agencies, private investors have also committed well over $1 billion toward the development of new commercial launch systems and international partnerships aimed at addressing global demand for commercial satellite launches. State governments and private entities have also built and started operating their own private launch sites in the past few years. Commercial launch demand has doubled since 1992, and commercial launches now outpace U.S. government launch rates for expendable vehicles.

The commercial sector is also rapidly developing new space-based capabilities, including global, mobile messaging, data transfer, and cellular phone services. The first wave of these capabilities is already built and operating, and the next wave, including high-speed Internet access from any point on Earth, is in development. The Clinton Administration□,s stable and predictable commercial space policy environment contributed to the ability of U.S. industry to develop and field these new space capabilities which promise to improve life on Earth.

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Jefferson Hofgard (CN=Jefferson Hofgard/OU=OSTP/O=EOP [OSTP])

CREATION DATE/TIME:28-OCT-1998 12:38:04.00

SUBJECT: Fact Sheet on Space Accomplishments

TO: Joseph C. Fanaroff (CN=Joseph C. Fanaroff/OU=WHO/O=EOP @ EOP [WHO])
READ:UNKNOWN

TEXT:
Here it is. If you recast it, can I take a look before it goes out?
Thanks.
---------- Forwarded by Jefferson Hofgard/OSTP/EOP on 10/28/98
12:36 PM ----------

Victor J. Villhard
10/28/98 12:11:26 PM
Record Type: Record

To: Jefferson Hofgard/OSTP/EOP
cc:
Subject:Fact Sheet on Space Accomplishments

FACT SHEET

CLINTON ADMINISTRATION SPACE ACCOMPLISHMENTS

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RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Sarah A. Laskin (CN=Sarah A. Laskin/OU=OMB/O=EOP [OMB])

CREATION DATE/TIME:17-NOV-1998 17:02:54.00

SUBJECT: Re: NPOESS Alert

TO: Stefanie A. Shannon (CN=Stefanie A. Shannon/OU=WHO/O=EOP@EOP [WHO])
READ:UNKNOWN

TEXT:
sorry.....too many similar names in EOP

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Stefanie A. Shannon (CN=Stefanie A. Shannon/OU=WHO/O=EOP [WHO])

CREATION DATE/TIME:17-NOV-1998 16:30:12.00

SUBJECT: Re: NPOESS Alert

TO: Sarah A. Laskin (CN=Sarah A. Laskin/OU=OMB/O=EOP @ EOP [OMB])
READ:UNKNOWN

TEXT:
This message got sent to me by mistake

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Sarah A. Laskin (CN=Sarah A. Laskin/OU=OMB/O=EOP [OMB])

CREATION DATE/TIME:17-NOV-1998 16:21:50.00

SUBJECT: Re: NPOESS Alert

TO: bakerc@osd.pentagon.mil@INET@LNGTWY (bakerc@osd.pentagon.mil@INET@LNGTWY [UNKNOWN])
READ:UNKNOWN

CC: Stefanie A. Shannon (CN=Stefanie A. Shannon/OU=WHO/O=EOP@EOP [WHO])
READ:UNKNOWN

TEXT:
Actually, we were not going to make it up in FY00 (otherwise ytou'd be carrying $73M, not $80M in your PDB).

However, Air Force's actions would be a big problem. Better woudl be for the passback to state what OMB expects the level to be in DOD in fy99.

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: mark@oce.orst.edu@INET@LNGTWY (mark@oce.orst.edu@INET@LNGTWY [WHO])

CREATION DATE/TIME: 5-JAN-1999 20:17:16.00

SUBJECT: Fw: Workshop ideas

TO: Sarah G. Horrigan@EOP (Sarah G. Horrigan@EOP [OMB])
READ:UNKNOWN

TEXT:
-----Original Message-----
From: Mark Abbott <mabbott@OCE.ORST.EDU>
To: ces <ces@nas.edu>
Date: Friday, November 06, 1998 11:08 AM
Subject: Workshop ideas

>
>
>Necessary preparation
>
> - Agency commitment to process
> - Clear statement to committees on the prioritized
> measurement list
> - Work with OSTP/OMB on process
> - Attendees list
>
>Goals (in order of importance)
>
>1. Develop and establish a process for:
> - transitioning measurements from research to
> operations
> - prioritizing and revisiting measurement needs
>
>2. Influence EOS second series (both systematic and
> Earth probe missions) and NPOESS suite
>
>3. Prioritize measurements
>
>Meeting Approach
>
>Part 1. Overview
>
>The need for satellite climate observations (long-term and exploratory)
> - science perspective
> - policy perspective
>
>The current situation (drawn from CES report)
> - (perhaps draw from 3 case studies)
>
>U.S. govt call for action and coordination (OSTP/OMB)
>
>Part 2. Prioritizing Measurements (science perspective)
>
>Presentation of strawman lists
> NOAA - OGP
> NASA - ESSAAC
> NRC - CGCR

```
>     NRC - CES
>     NRC - BASC
>     GCOS
>
>Breakout Groups
>     Multidisciplinary groups form their own prioritized lists
>        with rationale
>    Report back to plenary and develop consensus
>
>Part 3.  Optimization of Science requirements with
>Technical/Programmatic Reality
>
>Presentation of NPOESS plans
>Presentation of NASA plans
>NRC review of Easton/Kennel report
>CES review of NPOESS plan
>
>Breakout Groups
>    Given present technical and programmatic capabilities,
>      develop an "optimized" strategy that best addresses
>      prioritized science requirements.  Optimization must
>      consider technical feasibility, schedule, and cost
>
>Plenary - reports
>
>Part 4.  Establish an ongoing process
>
>Assess efficacy of process
>Agency coordination
>Measurement prioritization
>
>
>==================== ATTACHMENT    1 ====================
ATT CREATION TIME/DATE:    0 00:00:00.00

TEXT:
RFC-822-headers:
Received: from conversion.pmdf.eop.gov by PMDF.EOP.GOV (PMDF V5.1-9 #29131)
 id <01J66ZWWXE8W000IFL@PMDF.EOP.GOV> for horrigan_s@a1.eop.gov; Tue,
 5 Jan 1999 20:09:28 EST
Received: from storm.eop.gov by PMDF.EOP.GOV (PMDF V5.1-9 #29131)
 with ESMTP id <01J66ZWT0QLC000GVF@PMDF.EOP.GOV> for horrigan_s@a1.eop.gov;
 Tue, 05 Jan 1999 20:09:23 -0500 (EST)
Received: from dnsman.OCE.ORST.EDU ([128.193.64.33])
 by EOP.GOV (PMDF V5.2-29 #34437) with ESMTP id <01J66ZW3M38I0014BC@EOP.GOV>
 for horrigan_s@a1.eop.gov; Tue, 05 Jan 1999 20:08:49 -0500 (EST)
Received: from dingdong (dingdong.OCE.ORST.EDU [128.193.66.20])
 by dnsman.OCE.ORST.EDU (8.8.7/8.8.7) with SMTP id RAA27199     for
 <horrigan_s@a1.eop.gov>; Tue, 05 Jan 1999 17:08:49 -0800 (PST)
X-Mailer: Microsoft Outlook Express 4.72.2120.0
X-MIMEOLE: Produced By Microsoft MimeOLE V4.72.2120.0
X-MSMail-priority: Normal
X-Priority: 3
================== END ATTACHMENT    1 ==================
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CREATION DATE/TIME:19-APR-1999 12:59:53.00

SUBJECT: BASC Summer study

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TEXT:
A the NRC Governing Board Exec Council meeting last week, our summer study was
approved. The following document will serve as the basis of the summer study.
I will be working with the appropriate folks at NOAA and NASA to set out the
agenda over teh next week. The original thoughts were for three days of workshop and two days of writing. In the meantime, a reminder of the meeting
dates, Woods Hole, June 28 to July 2.

Joe

Transition from Research to Operations in the Atmospheric Sciences

Board on Atmospheric Sciences and Climate

SCOPE

BASC will conduct a summer study to explore issues associated with the transition of research developments in the atmospheric and climate sciences into
operational use. The board will review NOAA's plans to incorporate research
advancements into predictive capabilities at its National Centers for Environmental Prediction (NCEP), and its plans to transition the use of satellite sensors from development into operation through the NPOESS Preparatory
Program (NPP). The board will produce a brief report that analyzes these plans,
identifies major barriers to their implementation (if any), and recommends ways
to address these barriers.

Origin: External; Federal Executive; Informal
Keywords: atmospheric sciences

FACA COMPLIANCE

To be conducted according to the provisions of FACA, section 15: Yes, as required by law

TYPE OF ACTIVITY

Type: Consensus Study: workshop

EARLIER WORK AND COLLABORATIONS

Earlier Work:

The Atmospheric Sciences Entering the Twenty-First Century (BASC, 1998)
Capacity of U.S. Climate Modeling (BASC/CRC, 1998)
Adequacy of Climate Observing Systems (BASC/CRC, 1999)

Global Environment Change, Research Pathways for the Next Decade (CGCR, 1999)

APPROVAL RECORD
BASC BOARD (3/2/1999) Discussion at Board meeting
CGER (3/30/1999)

RESPONSIBLE STAFF OFFICER(S)
Elbert W. Friday, Jr., HA 476, 3512, jfriday@nas.edu

CONTEXT

Policy Context:

A number of recent NRC studies have highlighted the need for converting atmospheric and climate research developments into operational uses. The BASC "Atmospheric Sciences Entering the Twenty-First Century" (NRC, 1998), the Climate Research Committee report "Adequacy of Climate Observing Systems" (NRC, 1999) and "Capacity of U.S. Climate Modeling" (NRC, 1998), and the Committee on Climate Change Research report "Global Environmental Change, Research Pathways for the Next Decade" (NRC, 1998) all indicate areas of shortcoming in "Crossing the Valley of Death," the expression used by some in the corporate world to describe the transition of a project from research and development into production. These reports stress the need for planning for operational implementation of research observing systems for long-term monitoring, for implementing developments for improved forecasting capabilities, and for cooperation among the operational, research, and academic communities to ensure the public needs are met. Issues of transition from research also have been raised by federal representatives from NASA and NOAA at the last two BASC meetings, with specific emphasis on the transitions in weather prediction and satellite observing systems. The "Atmospheric Sciences Entering the Twenty-First Century" also identified specific atmospheric science research developments with high potential for improving predictions of weather, climate, space weather, and chemical weather.

Technical Context:

The National Centers for Environmental Prediction (NCEP) of NOAA's National Weather Service (NWS) is the major center in the United States for the production of fundamental weather and climate forecasts for civilian (and some military) use. NCEP operates a large computer facility to conduct operational numerical weather and climate predictions and provides those products to the government, the private meteorological sector, and the media. A major challenge for NCEP is how to most effectively incorporate new developments in atmospheric and climate research (from government, industry, and academic researchers) into its predictive capabilities. At two recent BASC meetings, representatives

from
NOAA and NASA have expressed concerns about NCEP's plans to facilitate this transition from research to operations. Some of the issues raised include: a
lack of facilities for dual operation of computer modes in parallel for adequate
testing, a reluctance to adopt models developed outside NCEP (i.e., "not invented here"), and lack of a strategic plan for improving weather forecasting
models. The director of NCEP has recognized these concerns and has asked the
BASC to provide a review of NCEP's strategic plans to facilitate this transition, which are currently in development.

NASA is in the process of developing several new satellite sensors that can be
used to better measure parameters important to weather and climate forecasting.
Two of the most challenging aspects of this effort are how to most effectively
transition satellite sensors from development to operation, and how to facilitate the operational community's use of these sensors after they are deployed. NOAA's NPOESS (National Polar-orbiting Operational Environmental Satellite System) Preparatory Program (NPP) is charged with developing a plan to
address these issues. Existing NPP plans call for transitioning the sensors to
NOAA operational satellites after they are launched on NASA's research satellites, but they do not address how to use these data most effectively in
operational weather and climate prediction. The plans also appear to be weak in
the method by which NOAA will make these data available to the research community (a major deficiency identified in the report "Adequacy of Climate Observing Systems"). NASA and NOAA sponsors have asked BASC to review the NPP,
with particular attention to that portion of the program that deals with the
readiness of the operational community to accept and use the sensor data.

Origin:
At the BASC meeting in Oct. 1998 agency representatives from NASA and NOAA raised issues dealing with the difficulties in transitioning from research to
operations in areas ranging from forecast model development to satellite instrumentation. The "21st Century" report, released in Dec. 1998, also highlighted this subject as an area that needed attention. Subsequent discussions were held between Joe Friday, the OFCM, and the Director, NCEP, to
determine an appropriate scope for the study presented here.

PLAN OF ACTION

Statement of Task:

The BASC will convene a summer study in a workshop format to explore issues related to the transition from research and development to operations in the
area of numerical weather prediction. Two case studies will form the nucleus of
the effort.

1) The plans being developed by NOAA's NCEP to incorporate recent advances in atmospheric science research into the next generation of numerical weather prediction models.

2) The NPOESS Preparatory Program that will be used to transition the satellite sensors developed by NASA into operational capabilities on the NOAA operational weather satellites. Of particular interest are how sensor data are to be used operationally and how such data will be made available to the operational and research communities.

The board will summarize these plans, analyze their strengths and weaknesses, including any major barriers to their successful implementation, and recommend improvements.

The project is to be perfomed by:
Existing standing board or committee
Standing Committee Name: Board on Atmospheric Sciences and Climate

Preliminary Work Plan:
The study will be a 5-day workshop. The first three days will consist of presentations from appropriate agency liaisions and speakers describing the programs and their technical plans for transitioning research developments into operational applications. The last two days will be a writing session of the board in closed session. Within six months of the workshop, the board will complete a brief report that summarizes and analyzes these plans, identifies major barriers to their implementation (if any), and recommends ways to address these barriers.

The BASC membership is appropriately constituted to conduct the summer study. There exists a balance between the science and operational perspectives. Three members of the board have direct experience in transitioning from research to operations. If it is decided to conduct a more extensive study of the issues associated with the transition from research to operations in atmospheric sciences as a result of the summer study, then a specifically constituted panel would be proposed.

RECORD TYPE: PRESIDENTIAL (NOTES MAIL)

CREATOR: Theresa Fisher <TFisher@nas.edu> (Theresa Fisher <TFisher@nas.edu> [UNKNOWN])

CREATION DATE/TIME:18-MAY-1999 12:14:27.00

SUBJECT: Background Material for May 26 meeting at National Research Council

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TEXT:
Date: Wednesday, May 26, 1999
Time: 3:00-5:00 p.m.
Place: NRC Georgetown Facility
Cecil and Ida Green Building
Conference Room 116
2001 Wisconsin Avenue, NW
Washington, DC

Subject: Discussion of a NRC workshop on transition from EOS to NPOESS for climate observations

Mark Abbott asked me to forward his message below . . .

---------- Forwarded by Theresa Fisher on 05/18/99 11:57 AM ----------

"Mark Abbott" <mark@oce.orst.edu> on 05/17/99 04:40:56 PM

To: Theresa Fisher
cc:
Subject: please forward to May 26 attendees

Charlie Kennel, Eric Barron, Tom Karl, Berrien Moore, and myself have developed the attached as a prospectus for the May 26 meeting. This will form the basis of our discussions.

>
>Background for Workshop on the Integration of IPO/NPOESS
>and NASA/ESE Capabilities for Climate Research
>
>Context
>
>The National Polar-orbiting Operational Environmental Satellite
>System (NPOESS) will provide operational support for a wide
>variety of Earth remote sensing measurements. Given the longer
>planned lifetime of the NPOESS satellites and their more stringent
>performance and stability requirements (relative to the present
>generation of POES and DMSP systems), there is an
>opportunity to begin the development of the operational
>component of an integrated satellite observing system for
>climate research and monitoring.
>
>In this context, one must recognize that the operational agencies
>have a charter which emphasizes short-term weather forecasts
>whereas research agencies, such as NASA/ESE, generally
>focus on specific science questions regarding climate
>processes. The challenge is that both of these goals often
>require long-term, systematic observations. Although the
>variables for both types of missions often have considerable
>overlap, there are often significant differences in the
>measurement requirements. Moreover, many variables
>required for climate studies are not of particular importance
>for short-term weather forecasting. Thus there will continue
>to be a requirement for a research component of climate
>observing system as well.
>
>Long-term (or systematic) observations in support of climate
>research require a comprehensive strategy, not simply
>improved requirements. Because climate variability occurs

>on a wide range of time and space scales and involves
>complex interactions between atmosphere, ocean, and land,
>we cannot completely specify with certainty the types of
>variables that need to be measured nor the appropriate
>sampling strategy. However, we can define the essential
>elements of the strategy. These include:
>
>o Scientific insight into sensor requirements and implementation
>o Calibration and validation of the sensor and its data products
> as well as comprehensive sensor characterization
>o Data analysis to assess data quality and develop new data
> products
>o Reprocessing of data to incorporate new knowledge
>o Ground networks for validation
>o Multiple approaches to variables to increase confidence
>o Assessment of temporal and spatial sampling strategies
>o Technology development to lower costs and improve
> performance
>
>This strategy goes beyond the capabilities of any single
>agency, and it requires more than just observations. It
>includes modeling, data analysis, and technology
>development as well. It is also apparent that NPOESS is
>a critical element of this strategy as it provides a platform
>for the long-term, continuous observations that will be
>required for many variables. NASA/ESE is also a critical
>element of the strategy, especially in its support of climate
>research and technology development. However,
>NASA/ESE is now planning to rely heavily on NPOESS for
>the systematic observations that are required to meet
>climate research objectives. The challenge is to integrate
>the operational stability of IPO/NPOESS with the research
>flexibility of NASA/ESE. At present, there is no system
>integrator nor a process to assess climate requirements
>and assess the overall approach and balance of the
>observational system.
>
>How do we obtain research-quality data sets to study
>decadal-scale processes? How do we implement a series
>of long-term measurements more cheaply yet continue to
>meet climate research requirements? The answers will
>include both operational satellite platforms and research
>satellite platforms. Moreover, it will also involve a new
>category of missions in which both research and operations
>work together on data sets of mutual interest. Such
>pre-operational missions could be used to bridge between
>the needs of research and operational users as well as forge
>links between the observational and satellite sensor
>communities. An integrated strategy is critical given the
>need for continuous high quality data, the size of the national
>investment involved, and the need to demonstrate scientific
>progress upon which to base sound national policies regarding
>climate.
>
>Approach
>
>These issues can be addressed on several levels. At the
>highest level are national needs to formulate policy regarding
>climate and long-term environmental variability. Next are
>policy issues regarding the integration of research and
>operational observing systems. Below this level are national
>policy objectives regarding the collection and analysis of
>decadal-scale observations. Lastly, there are narrower issues
>regarding the development of NPOESS and the NASA/ESE
>missions. Rather than concentrate on the larger issues, we

>propose to make interim progress on the specific issues of
>NPOESS and NASA/ESE, with the expectation that this
>process will reveal the larger issues and policy drivers as well.
>
>We propose a workshop to address these issues. A small set
>of critical satellite-based data sets that are needed to study
>decadal-scale climate variability would form the basis of the
>workshop discussions. These variables would be selected in
>advance of the workshop, based on IPCC, NRC, and NASA
>reports. The workshop would address the structures (including
>policy, agency, and observing systems) that need to be
>established to obtain these data sets with sufficient overall
>quality to meet climate research requirements. The workshop
>would examine both the IPO/NPOESS and the NASA/ESE
>plans and develop a strategy to meet these observational
>priorities that is optimized within the technical, fiscal, schedule,
>and programmatic constraints of the two programs.
>
>Specific attention would be paid to those variables where
>realistic changes can be made within the NPOESS plans to
>meet climate research needs. This may mean improved sensor
>performance or better sensor characterization, among others.
>Systematic measurements that have been identified by
>NASA/ESE as candidates for continued measurement by
>NPOESS would be examined in detail. The details of the
>programmatics are beyond the purview of the workshop, as
>they may require joint efforts between IPO/NPOESS and
>NASA/ESE as well as individual efforts. Instead, the
>workshop would concentrate on identifying the research
>needs and where the observational requirements and approach
>could be changed to meet these needs. This assessment
>would be done in the larger context of a climate observing
>strategy as described above, rather than simply refine sensor
>requirements.
>
>There would likely be high-priority variables that simply cannot
>be accomplished within the NPOESS framework. The
>workshop would identify such variables, and suggest possible
>approaches. This may include continued measurements by
>NASA/ESE, bridging missions between the two programs,
>technology development, or international partnerships.
>Moreover, the emphasis is on system integration, rather than
>simply transition of research measurements to an operational
>system.
>
>The development of a climate observing strategy will rely on
>several components, including both research and operational
>systems as well as international partnerships. There is no single
>system.
>
>This workshop will help develop a process for
>assessing the strategies of the research and operational
>agencies and how they can be optimized to meet climate
>research needs. Given that both science and technology will
>continue to evolve, this strategy must be reassessed on a
>regular basis. Such a process will allow sound decisions to
>be made, evaluating the various options in the context of
>research and policy needs.
>
>
>
>
>**********Candidate Variables for Workshop **********

>atmos temp/moisture profiles

>clouds
>total solar irradadiance
>SST
>precipitation
>land cover
>stratospheric ozone and aerosols
>ocean winds
>ocean topogography
>
>**********
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>

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CREATION DATE/TIME:27-MAY-1999 18:46:30.00

SUBJECT: Tentative Date for Workshop on Climate Research and NPOESS

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TEXT:
Thanks to all of you who were able to participate in yesterday's planning meeting.

Tentatively, we are scheduling the 2-day workshop for July 26-27, 1999 in room
104 (seats 57) of the Green Building at the NRC Georgetown Facility at 2001 Wisconsin Ave. NW. I will be in touch with information about invitees, the workshop agenda, and preparation of background materials in the coming week or
so. Please let me know as soon as possible if you are unavailable on these dates; if so, please suggest other 2-day periods during the week of July 26-30.
Thanks.

Art

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