# NASA Video Catalog

NASA/SP—2008-7109/SUPPL18

# October 2008

VIDEO


National Aeronautics and
Space Administration
**Langley Research Center**
**Scientific and Technical**
**Information Program Office**

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The videos were developed by the NASA centers, covering space shuttle mission press conferences; fly-bys of planets; flight vehicle design, testing, and performance; environmental pollution; lunar and planetary exploration; and many other subjects related to manned and unmanned space exploration.

The collection of motion pictures recently digitized from original 16mm films, document some aerodynamics testing and other research performed at Langley Research Center from 1958 through 1979. High-resolution QuickTime® format DVDs are now available for purchase. Citations include links to online low- and medium-resolution previews.

Each entry in the catalog consists of a standard bibliographic citation accompanied by an abstract. The table of contents lists the subject matter covered according to the *NASA Scope and Subject Category Guide*. In addition, a title index is included, along with a subject term index based on the *NASA Thesaurus*. Guidelines, terms and conditions for usage of NASA audio/visual materials, and ordering information are also included.

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Document citations are grouped by division and then by category, according to the *NASA Scope and Coverage Category Guide.*

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### Astronautics



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## Life Sciences



## Mathematical and Computer Sciences



## Physics



## Social and Information Sciences



## Space Sciences



## General



# Indexes

Two indexes are available. You may use the find command under the tools menu while viewing the PDF file for direct match searching on any text string. You may also select either of the two indexes provided for linking to the corresponding document citation from *NASA Thesaurus* terms and personal author names.

# NASA
# VIDEO CATALOG

*A Publication of the National Aeronautics and Space Administration*

OCTOBER 2008

## 01
## AERONAUTICS (GENERAL)

Includes general research topics related to manned and unmanned aircraft and the problems of flight within the Earth's atmosphere. Also includes manufacturing, maintenance, and repair of aircraft. For specific topics in aeronautics, see categories 02 through 09. For information related to space vehicles see 12 Astronautics.

**19950004297** NASA Dryden Flight Research Center, Edwards, CA, USA
**Dryden and transonic research**
May 27, 1992; In English; 20th Anniversary F-8 Digital Fly-By-Wire (DFBW) and Supercritical Wing (SCW) Symposium, 1995
Report No(s): NASA-TM-104281; NONP-NASA-VT-94-23629; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS

This video on transonic research is given by Dryden engineer Ed Saltzman as part of the 20th Anniversary F-8 Digital Fly-By-Wire (DFBW) and Supercritical Wing (SCW) Symposium.
DFRC
*F-8 Aircraft; Fly By Wire Control; Research; Supercritical Wings; Transonic Flow*

**19950004337** NASA Dryden Flight Research Center, Edwards, CA, USA
**NACA/NASA: X-1 through X-31**
Apr 4, 1994; In English
Report No(s): NASA-TM-104304; NONP-NASA-VT-94-23649; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS

This video presents clips (in-flight, ground crew, pilots, etc.) of almost everything from X-1 through X-31.
DFRC
*Research Aircraft; Research Projects*

**20060026154** NASA Kennedy Space Center, Cocoa Beach, FL, USA
**STS-121: Discovery Post Landing Press Conference**
July 17, 2006; In English; 48 min., 38 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V03, Videotape-VHS: B03, Videotape-Beta

On July 17, 2006 Dean Acosta (NASA Press Secretary), Mike Griffin (Administrator), Bill Gerstenmaier (Associate Administrator of Space Operations), and Mike Leinbach (NASA Launch Director) expressed how proud they were to be a part of the STS-121/ Discovery team. They also explained how flawlessly the mission performed and how it was the best mission ever flown. They proceeded to answer numerous questions from the press.
CASI
*Launching; Conferences; Space Transportation System*

# 02
# AERODYNAMICS

Includes aerodynamics of flight vehicles, test bodies, airframe components and combinations, wings, and control surfaces. Also includes aerodynamics of rotors, stators, fans, and other elements of turbomachinery. For related information see also 34 Fluid Mechanics and Thermodynamics.

**19950013580** NASA Dryden Flight Research Center, Edwards, CA, USA
**F-16XL interview with Marta Bohn-Meyer**
Jul 27, 1992; In English
Report No(s): NASA-TM-110505; NONP-NASA-VT-95-41117; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS

Marta Bohn-Meyer discusses the cooperative research between Rockwell Industries and NASA research facilities in their effort to optimize and maintain the supersonic laminar flow on the F-16XL aircraft. Research on the airfoil design, chord optimization, introduction of a suction feature to maintain pressure distribution, and CFD, both theoretical and actual phenomena, are discussed. Bohn-Meyer discusses the difference between supersonic and subsonic laminar flow, cross flow, reasons behind using this particular F-16 aircraft for this research, and the future of this ongoing research, including the data base that investigators are building from wind tunnel data and in-flight validation.
DFRC
*Aircraft Design; Airfoils; F-16 Aircraft*

**20070030946** NASA Langley Research Center, Hampton, VA USA
**Flow Over Blunt Body at M equals 20 in 2-Inch Helium Tunnel**
July 22, 1960; In English; Originally recorded in 16mm, Silent, Black & White, 37ft., 1min.; DVD produced from the original 16mm recording
Report No(s): L-562; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The film shows flow over blunt body alone, with internal spike, and with external spikes.
CASI
*Blunt Bodies; Wind Tunnel Tests; Flow Characteristics; Spikes (Aerodynamic Configurations)*

**20070030947** NASA Langley Research Center, Hampton, VA USA
**Tests of Vortex-Ring Parachute at Supersonic Speed in the Langley Unitary Plan Wind Tunnel**
July 18, 1960; In English; Originally recorded in 16mm, Silent, Black & White, 306ft., 8.5min.; DVD produced from the original 16mm recording
Report No(s): L-560; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

For the test, the 12-inch-diameter ‘Vortex-Ring’ parachute was towed behind a conical-nosed cylindrical body 2.25 inches in diameter. The tow-cable length was 24 inches, and was attached to the cylindrical body through a large swivel and to the parachute through a smaller swivel. The attachment between the large swivel an the cylindrical body failed after about 1 minute’s operation. Mach number was approximately 2.2, dynamic pressure was approximately 150 pounds per square foot, and camera speed was approximately 3000 frames per second.
Derived from text
*Parachutes; Wind Tunnel Tests; Supersonic Speed; Vortex Rings; Swivels*

**20070030948** NASA Langley Research Center, Hampton, VA USA
**High-Speed Schlieren Movies of the Flow About Reefed Parachute Models Towed at Supersonic Speeds Behind a Conical Body (4.875 Inches in Diameter). Drag Values Based on the Unreefed Diameter of 1.73 F. Porosity of Unreefed Parachute is 28 Percent.**
June 28, 1960; In English; Originally recorded in 16mm, Silent, Black & White, 550ft., 15.5min.; DVD produced from the original 16mm recording
Report No(s): L-556; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Flexible parachute models reefed to one-eighth, one-fourth, one-third, and four tenths of its diameter were towed at speeds of Mach 1.80, 2.00, 2.20 and 2.87. Towline lengths tested were 23.40, 24.38, 26.81, and 29.25 inches. High-speed Schlieren movies of the flow are shown.
Derived from text
*Parachutes; Supersonic Speed; Aerodynamic Drag; Flow Visualization; Wind Tunnel Tests; Supersonic Flow*

**20070030956** National Advisory Committee for Aeronautics. Langley Aeronautical Lab., Langley Field, VA USA
**Schlieren Movies of the 8-Inch Diameter Rigid Parachute Model of the Cook Research Laboratory Taken During the Fourth Phase of Testing in the Langley Unitary Plan Wind Tunnel**
September 29, 1958; In English; Originally recorded in 16mm, Silent, Black & White, 845ft., 23min.; DVD produced from the original 16mm recording
Report No(s): L-396; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)
Canopy Model IV was tested in four different configuration series. Shroud lines were used in the first three series of tests; none were used in the fourth series. Other variables were Mach number (1.77, 2.17, 2.76), dynamic pressure (290, 250, 155 lb per sq ft), camera speed, and attitude.
Derived from text
*Wind Tunnel Tests; Parachutes; Rigid Structures; Schlieren Photography*

**20070030958** National Advisory Committee for Aeronautics. Langley Aeronautical Lab., Langley Field, VA USA
**Aerodynamic Heating of Blunt Nose Shapes at Mach Numbers up to 14**
April 23, 1958; In English; See also 19710065515; See also NACA-RM-L58E05a; Originally Recorded in 16mm, Silent, Black & White 330ft., 2min.; DVD produced from the original 16mm recording
Report No(s): L-316; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)
Results are presented from investigations of the aerodynamic heating rates of blunt nose shapes at Mach numbers up to 14. The wind-tunnel tests examined flat-faced cylinder stagnation-point heating rates over the Mach number range. The tests also examined heat transfer and angle of attack.
Author (revised)
*Aerodynamic Heating; Wind Tunnel Tests; Hypersonic Speed; Supersonic Speed; Blunt Bodies; Noses (Forebodies)*

**20070030960** NASA Langley Research Center, Hampton, VA USA
**Unitary Plan Wind Tunnel Tests of Cook Technological Center Parachutes in the Wake of a Conical-Nosed Cylindrical Body Having a Base Diameter of 2.375-Inches (Part 5 of 6)**
May 09, 1962; In English; Originally recorded in 16mm, Silent, Black & White, 17.5 min.; DVD produced from the original 16mm recording
Report No(s): L-729; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)
The film depicts two tests of a flat roof, conical inlet canopy parachute. The first test is a series of wind tunnel trials with a flat circular ribbon roof of 22 percent porosity. The second test is a single series of wind tunnel trials with a flat circular ribbon roof of 25 percent porosity. Variables for both trials include Mach number, dynamic pressure, longitudinal separation distances (x/d), and drag coefficient C(sub d).
Derived from text
*Wind Tunnel Tests; Parachutes; Supersonic Wakes; Cylindrical Bodies*

**20070030962** NASA Langley Research Center, Hampton, VA USA, NASA Ames Research Center, Moffett Field, CA, USA
**Aerodynamic Heating and Deceleration During Entry into Planetary Atmospheres**
Chapman, Dean R.; April 10, 1962; In English; Originally recorded in 16mm, Sound, Black & White, 1100ft., 29min.; DVD produced from the original 16mm recording
Report No(s): L-713; HQ-5; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)
Dr. Chapman's lecture examines the physics behind spacecraft entry into planetary atmospheres. He explains how

scientists determine if a planet has an atmosphere and how scientists can compute deceleration when the atmospheric conditions are unknown. Symbols and equations used for calculations for aerodynamic heating and deceleration are provided. He also explains heat transfer in bodies approaching an atmosphere, deceleration, and the use of ablation in protecting spacecraft from high temperatures during atmospheric entry.
CASI
*Aerodynamic Heating; Atmospheric Entry; Deceleration*

**20070030965** NASA Langley Research Center, Hampton, VA USA
**Unitary Wind Tunnel Tests of 30-Degree Conical Ribbon Parachute and a Rotofoil Parachute Towed in the Wake of a Conical Nosed Cylindrical Body**
March 02, 1962; In English; Originally recorded in 16mm, Silent, Black & White, 880ft., 24.5min.; DVD produced from the original 16mm recording
Report No(s): L-683; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Multiple wind tunnel test trials were conducted on a 30 degree conical ribbon parachute with porosities of 30, 27, and 24 percent. Variables were Mach number, dynamic pressure, towline length, and coefficient of drag. A Rotofoil parachute having a porosity of approximately 24 percent was tested, but failed after about 30 seconds of operation at a Mach number of 1.8 All of the parachutes had a nominal diameter and shroud line length of 10 inches. Drag coefficients were based on the area of a circle having a diameter two-thirds of the nominal parachute diameter.
Derived from text
*Wind Tunnel Tests; Ribbon Parachutes; Aerodynamic Drag; Conical Bodies; Nose Cones*

**20070030967** NASA Langley Research Center, Hampton, VA USA
**Wind Tunnel Investigation of a Balloon as Decelerator at Mach Numbers from 1.47 to 2.50**
McShera, John T.; Keyes, J. Wayne; August 1961; In English; See also 19980227793; See also NASA-TN-D-919; Originally recorded in 16mm, Silent, Black & White, 190ft., 5.5min.; DVD produced from the original 16mm recording
Report No(s): L-628; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
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A wind-tunnel investigation was conducted to study the characteristics of a towed spherical balloon as a drag device at Mach numbers from 1.47 to 2.50, Reynolds numbers from 0.36 x 10(exp 6) to 1.0 x 10(exp 6) , and angles of attack from -15 to 15 degrees. Tow-cable length was approximately 24 inches from asymmetric body to cone on the upstream side of the balloon. As the tow cable was lengthened the balloon reached a point in the test section where wall-reflected shocks intersected the balloon and caused severe oscillations. As a result, the tow cable broke and the inflatable balloon model was destroyed. Further tests used a model rigid plastic sphere 6.75 inches in diameter. Tow cable length was approximately 24 inches from asymmetric body to the upstream side of the sphere.
Author (revised)
*Tethered Balloons; Wind Tunnel Tests; Supersonic Speed; Drag Devices; Brakes (For Arresting Motion)*

**20070030970** NASA Langley Research Center, Hampton, VA USA
**Aerodynamic Characteristics of Parachutes at Mach Numbers from 1.6 to 3**
Maynard, J. D.; February 1961; In English; See also 20010024158; See also NASA-TN-D-752; Originally recorded in 16mm, Silent, Black & White, 1000ft., 31min.; DVD produced from the original 16mm recording
Report No(s): L-598; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

A wind-tunnel investigation was conducted to determine the parameters affecting the aerodynamic performance of drogue parachutes in the Mach number range from 1.6 to 3. Flow studies of both rigid and flexible-parachute models were made by means of high-speed schlieren motion pictures and drag coefficients of the flexible-parachute models were measured at simulated altitudes from about 50,000 to 120,000 feet.
Author (revised)
*Supersonic Speed; Wind Tunnel Tests; Aerodynamic Drag; Drag Chutes; Aerodynamic Coefficients*

**20070030972** NASA Langley Research Center, Hampton, VA USA

**High Speed Schlieren Studies of Flow Over Mercury Atlas Vehicle in the Langley 2-Foot Transonic Aeroplasticity Tunnel**

December 02, 1960; In English; Originally recorded in 16mm, Silent, Black & White, 535ft., 15min.; DVD produced from the original 16mm recording

Report No(s): L-583; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)

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Test conditions for the studies are: Mach number varying continuously from approximately 0.8 to 1.1 and Reynolds number (based on maximum diameter of Atlas) approximately 0.451 x 10(exp 6). Camera speed is 2000 frames per second.

Derived from text

*Transonic Wind Tunnels; Mercury Spacecraft; Atlas Launch Vehicles; Transonic Speed; Schlieren Photography*

**20070030973** NASA Langley Research Center, Hampton, VA USA

**High-Speed Schlieren Movies of Decelerators at Supersonic Speeds**

August 10, 1960; In English; Originally recorded in 16mm, Silent, Black & White, 245ft., 7min.; DVD produced from the original 16mm recording

Report No(s): L-569; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)

ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Tests were conducted on several types of porous parachutes, a paraglider, and a simulated retrorocket. Mach numbers ranged from 1.8-3.0, porosity from 20-80 percent, and camera speeds from 1680-3000 feet per second (fps) in trials with porous parachutes. Trials of reefed parachutes were conducted at Mach number 2.0 and reefing of 12-33 percent at camera speeds of 600 fps. A flexible parachute with an inflatable ring in the periphery of the canopy was tested at Reynolds number 750,000 per foot, Mach number 2.85, porosity of 28 percent, and camera speed of 36oo fps. A vortex-ring parachute was tested at Mach number 2.2 and camera speed of 3000 fps. The paraglider, with a sweepback of 45 degrees at an angle of attack of 45 degrees was tested at Mach number 2.65, drag coefficient of 0.200, and lift coefficient of 0.278 at a camera speed of 600 fps. A cold air jet exhausting upstream from the center of a bluff body was used to simulate a retrorocket. The free-stream Mach number was 2.0, free-stream dynamic pressure was 620 lb/sq ft, jet-exit static pressure ratio was 10.9, and camera speed was 600 fps.

Derived from text

*Schlieren Photography; Brakes (For Arresting Motion); Supersonic Speed; Parachutes; Retrorocket Engines; Vortex Rings; Paragliders; Aerodynamic Characteristics*

**20070030995** NASA Langley Research Center, Hampton, VA USA

**Performance of a 16.6 Meter Diameter Cross Parachute in a Simulated Martian Environment**

Lundstrom, Reginald R.; Darnell, Wayne L.; Coltrane, Lucille C.; February 1968; In English; See also 19680012364; See also NASA-TM-X-1543; Originally recorded in 16mm, Silent, Color, 112ft., 3min.; DVD produced from the original 16mm recording

Report No(s): L-985; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)

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Inflation and drag characteristics of a 54.4-foot (16.6 meter) nominal-diameter cross parachute, deployed at a Mach number of 1.65 and a dynamic pressure of 12.68 lb/sq f t (607.1 N/m(exp2)), were obtained from the fourth balloon-launched flight test of the Planetary Entry Parachute Program (PEPP). After deployment, the parachute quickly inflated to a full condition, partially collapsed, and then gradually reinflated while undergoing rapid oscillations between over-inflation and under-inflation. The oscillations began while the parachute was still at supersonic speeds and continued to low subsonic speeds well below an altitude of 90,000 feet (27.4 km). These canopy instabilities produced large cyclic variations in the parachute's drag coefficient. The average value of drag coefficient was about 0.8 to 0.9 at subsonic speeds and slightly lower at supersonic speeds. These drag coefficient values were based on the actual fabric surface area of the parachute canopy. The parachute sustained minor damage consisting of two canopy tears and abrasions and tears on the riser line. It is believed that this damage did not produce a significant change in the performance of the parachute.

Author

*Aerodynamic Drag; Atmospheric Entry Simulation; Inflating; Parachutes; Supersonic Speed; Subsonic Speed*

**20070030996** NASA Langley Research Center, Hampton, VA USA

**Performance of a 16.6 Meter Diameter Modified Ringsail Parachute in a Simulated Martian Environment**

Whitlock, Charles H.; Henning, Allen B.; Coltrane, Lucille C.; January 1968; In English; See also 19680004623; See also NASA-TM-X-1500; Originally recorded in 16mm, Silent, Color, 150ft., 4.2min. DVD produced from the original 16mm recording

Report No(s): L-984; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)

ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Inflation, drag, and stability characteristics of a 54.5 -foot nominal-diameter (16.6-meter) modified ringsail parachute deployed in the wake of a 15-foot-diameter (4.6-meter) spacecraft traveling at a Mach number of 1.6 and a dynamic pressure equal to 11.6 psf (555 N/m(exp 2)) were obtained from the third balloon-launched flight test of the Planetary Entry Parachute Program. After deployment, the parachute inflated rapidly to a full condition, partially collapsed, and reinflated to a stable configuration. After reinflation, an average drag coefficient near 0.6 based on nominal surface area was obtained. During descent, an aerodynamic trim angle was observed in a plane near several torn sails. Amplitude of the trim was approximately 15 degrees and oscillation about trim was less than 11 degrees.

Author

*Aerodynamic Drag; Atmospheric Entry; Parachute Descent; Aerodynamic Stability; Inflating*

**20070030997** NASA Langley Research Center, Hampton, VA USA

**Performance of a 19.7 Meter Diameter Disk-Gap-Band Parachute in a Simulated Martian Environment**

Bendura, Richard J.; Coltrane, Lucille C.; Huckins III, Earle K.; January 1968; In English; See also 19680004328; See also NASA-TM-X-1499; Originally recorded in 16mm, Silent, Color, 150ft., 4.25min.; DVD produced from the original 16mm recording

Report No(s): L-983; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)

ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Inflation and drag characteristics of a 64.7-foot (19.7-meter) nominal-diameter disk-gap-band parachute deployed at a Mach number of 1.59 and a dynamic pressure of 11.6 psf (555 newtons per m(exp 2)) were obtained from the second balloon-launched flight test of the Planetary Entry Parachute Program. In addition, parachute stability characteristics during the subsonic descent portion of the test are presented. After deployment, the parachute rapidly inflated to a full condition, partially collapsed, and then reinflated to a stable configuration. After reinflation, an average drag coefficient of about 0.55 based on nominal surface area was obtained. The parachute exhibited good stability characteristics during descent. The only major damage to the parachute during the test was the tearing of two canopy panels; a loss of less than 0.5 percent of nominal surface area resulted.

Author

*Aerodynamic Drag; Aerodynamic Coefficients; Atmospheric Entry; Parachutes; Aerodynamic Stability*

**20070030998** NASA Langley Research Center, Hampton, VA USA

**Flight Tests of a 40-Foot Nominal Diameter Modified Ringsail Parachute Deployed at Mach 1.64 and Dynamic Pressure of 9.1 Pounds Per Square Foot**

Eckstrom, Clinton V.; Murrow, Harold N.; Preisser, John S.; December 1967; In English; See also 19680002451; See also NASA-TM-X-1484; Originally recorded in 16mm, Silent, Color, 120ft., 3.3min.; DVD produced from the original 16mm recording

Report No(s): L-981; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)

ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

A ringsail parachute, which had a nominal diameter of 40 feet (12.2 meters) and reference area of 1256 square feet (117 m(exp 2)) and was modified to provide a total geometric porosity of 15 percent of the reference area, was flight tested as part of the rocket launch portion of the NASA Planetary Entry Parachute Program. The payload for the flight test was an instrumented capsule from which the test parachute was ejected by a deployment mortar when the system was at a Mach number of 1.64 and a dynamic pressure of 9.1 pounds per square foot (43.6 newtons per m(exp 2)). The parachute deployed to suspension line stretch in 0.45 second with a resulting snatch force of 1620 pounds (7200 newtons). Canopy inflation began 0.07 second later and the parachute projected area increased slowly to a maximum of 20 percent of that expected for full

inflation. During this test, the suspension lines twisted, primarily because the partially inflated canopy could not restrict the twisting to the attachment bridle and risers. This twisting of the suspension lines hampered canopy inflation at a time when velocity and dynamic-pressure conditions were more favorable.
Author
*Atmospheric Entry; Parachutes; Inflating*

**20070030999** NASA Langley Research Center, Hampton, VA USA
**Flight Test of a 30-Foot Nominal-Diameter Disk-Gap-Band Parachute Deployed at Mach 1.56 and Dynamic Pressure of 11.4 Pounds per Square Foot**
Eckstrom, Clinton V.; Preisser, John S.; September 05, 1967; In English; See also 19670026287; See also NASA-TM-X-1451; Originally recorded in16mm, Silent, Color 100ft., 3min.; DVD produced from the original 16mm recording
Report No(s): L-968; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

A 30-foot (9.1 meter) nominal-diameter disk-gap-band parachute (reference area 707 sq ft (65.7 m(exp 2)) was flight tested with a 200-pound (90.7 kg) instrumented payload as part of the NASA Planetary Entry Parachute Program. A deployment mortar ejected the test parachute when the payload was at a Mach number of 1.56 and a dynamic pressure of 11.4 lb/sq ft (546 newtons per m 2 ) at an altitude of 127,500 feet (38.86 km). The parachute reached suspension line stretch in 0.37 second resulting in a snatch force loading of 1270 pounds (5650 N). Canopy inflation began 0.10 second after line stretch. A delay in the opening process occurred and was apparently due to a momentary interference of the glass-fiber shroud used in packing the parachute bag in the mortar. Continuous canopy inflation began 0.73 second after initiation of deployment and 0.21 second later full inflation was attained for a total elapsed time from mortar fire of 0.94 second. The maximum opening load of 3915 pounds (17,400 newtons) occurred at the time the canopy was first fully opened. The parachute exhibited an average drag coefficient of 0.52 during the deceleration period and pitch-yaw oscillations of the canopy were less than 5 degrees. During the steady-state descent portion of the test period, the average effective drag coefficient was about 0.47 (based on vertical descent velocity and total system weight).
Author
*Parachutes; Aerodynamic Drag; Atmospheric Entry; Inflating; Descent*

**20070031000** NASA Langley Research Center, Hampton, VA USA
**Flight Test of 31.2 Diameter Modified Ringsail Parachute Deployed at Mach 1.39, Dynamic Pressure 11 Pounds per Square Foot**
Preisser, John S.; Eckstrom, Clinton V.; Murrow, Harold N.; April 25, 1967; In English; See also 19670022936; See also NASA-TM-X-1414; Originally recorded in 16mm, Silent, Color, 120ft., 3.5min.; DVD produced from the original 16mm recording
Report No(s): L-966; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

A 31.2-foot (9.51 meter) nominal diameter (reference area 764 ft(exp 2) (71.0 m(exp 2)) ringsail parachute modified to provide 15-percent geometric porosity was flight tested while attached to a 201-pound mass (91.2 kilogram) instrumented payload as part of the rocket launch portion of the NASA Planetary Entry Parachute Program (PEPP). The parachute deployment was initiated by the firing of a mortar at a Mach number of 1.39 and a dynamic pressure of 11.0 lb/ft(exp 2) (527 newtons/m(exp 2)) at an altitude of 122,500 feet (37.3 kilometers). The parachute deployed to suspension-line stretch (snatch force) in 0.35 second, and 0.12 second later the drag force increase associated with parachute inflation began. The parachute inflated in 0.24 second to the full-open condition for a total elapsed opening time of 0.71 second. The maximum opening load of 3970 pounds (17,700 newtons) came at the time the parachute was just fully opened. During the deceleration period, the parachute exhibited an average drag coefficient of 0.52 and oscillations of the parachute canopy were less than 5 degrees. During the steady-state terminal descent portion of the test period, the average effective drag coefficient (based on vertical descent velocity) was 0.52.
Author
*Atmospheric Entry; Parachutes; Parachute Descent; Aerodynamic Characteristics*

**20070031003** NASA Langley Research Center, Hampton, VA USA

**Performance of 26 Meter Diameter Ringsail Parachute in a Simulated Martian Environment**

Whitlock, Charles H.; Bendura, Richard J.; Cotrane, Lucille C.; February 1967; In English; See also 19670009951; See also NASA-TM-X-1356; 16mm, Silent, Color, 80ft., 2.5min.; DVD produced from the original 16mm recording

Report No(s): L-946; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)

ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Inflation, drag, and stability characteristics of an 85.3-foot (26-meter) nominal diameter ringsail parachute deployed at a Mach number of 1.15 and at an altitude of 132,600 feet (40.42 kilometers) were obtained from the first flight test of the Planetary Entry Parachute Program. After deployment, the parachute inflated to the reefed condition. However, the canopy was unstable and produced low drag in the reefed condition. Upon disreefing and opening to full inflation, a slight instability in the canopy mouth was observed initially. After a short time, the fluctuations diminished and a stable configuration was attained. Results indicate a loss in drag during the fluctuation period prior to stable inflation. During descent, stability characteristics of the system were such that the average pitch-yaw angle from the local vertical was less than 10 degrees. Rolling motion between the payload and parachute canopy quickly damped to small amplitude.

Author

*Aerodynamic Drag; Parachutes; Atmospheric Entry; Descent; Aerodynamic Stability; Inflating*

**20070031005** NASA Langley Research Center, Hampton, VA USA

**High Altitude Flight Test of a 40-Foot Diameter (12.2 meter) Ringsail Parachute at Deployment Mach Number of 2.95**

Eckstrom, Clinton V.; May 1970; In English; See also 19700022313; See also NASA-TN-D-5796; Originally recorded in 16mm, Silent, Color, 115ft., 3.2min

Report No(s): L-1077; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)

ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

A 40-foot-nominal-diameter (12.2-meter) modified ringsail parachute was flight tested as part of the NASA Supersonic High Altitude Parachute Experiment (SHAPE) program. The 41-pound (18.6-kg) test parachute system was deployed from a 239.5-pound (108.6-kg) instrumented payload by means of a deployment mortar when the payload was at an altitude of 171,400 feet (52.3 km), a Mach number of 2.95, and a free-stream dynamic pressure of 9.2 lb/sq ft (440 N/m(exp 2)). The parachute deployed properly, suspension line stretch occurring 0.54 second after mortar firing with a resulting snatch-force loading of 932 pounds (4146 newtons). The maximum loading due to parachute opening was 5162 pounds (22 962 newtons) at 1.29 seconds after mortar firing. The first near full inflation of the canopy at 1.25 seconds after mortar firing was followed immediately by a partial collapse and subsequent oscillations of frontal area until the system had decelerated to a Mach number of about 1.5. The parachute then attained a shape that provided full drag area. During the supersonic part of the test, the average axial-force coefficient varied from a minimum of about 0.24 at a Mach number of 2.7 to a maximum of 0.54 at a Mach number of 1.1. During descent under subsonic conditions, the average effective drag coefficient was 0.62 and parachute-payload oscillation angles averaged about &loo with excursions to +/-20 degrees. The recovered parachute was found to have slight damage in the vent area caused by the attached deployment bag and mortar lid.

Author

*Aerodynamic Drag; Parachutes; Supersonic Speed; Subsonic Speed*

**20070031007** NASA Langley Research Center, Hampton, VA USA

**High Altitude Flight Test of a Reefed 12.2 Meter Diameter Disk-Gap-Band Parachute with Deployment at Mach Number of 2.58**

Grow, R. Bruce; Preisser, John S.; August 1971; In English; See also 19710024550; See also NASA-TN-D-6469; Originally recorded in 16mm, Silent, Color, 180ft., 5min.; DVD produced from the original 16mm recording

Report No(s): L-1106; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)

ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

A reefed 12.2-meter nominal-diameter (40-ft) disk-gap-band parachute was flight tested as part of the NASA Supersonic High Altitude Parachute Experiment (SHAPE) program. A three-stage rocket was used to drive the instrumented payload to an altitude of 43.6 km (143,000 ft), a Mach number of 2.58, and a dynamic pressure of 972 N/m(exp 2) (20.3 lb/ft(exp 2)) where the parachute was deployed by means of a mortar. The parachute deployed satisfactorily and reached a partially inflated

condition characterized by irregular variations in parachute projected area. A full, stable reefed inflation was achieved when the system had decelerated to a Mach number of about 1.5. The steady, reefed projected area was 49 percent of the steady, unreefed area and the average drag coefficient was 0.30. Disreefing occurred at a Mach number of 0.99 and a dynamic pressure of 81 N/m(exp 2) (1.7 lb/ft(exp 2)). The parachute maintained a steady inflated shape for the remainder of the deceleration portion of the flight and throughout descent. During descent, the average effective drag coefficient was 0.57. There was little, if any, coning motion, and the amplitude of planar oscillations was generally less than 10 degrees. The film also shows a wind tunnel test of a 1.7-meter-diameter parachute inflating at Mach number 2.0.
Author (revised)
*Parachutes; Wind Tunnel Tests; Supersonic Speed; Subsonic Speed; Inflating; Flight Tests; Aerodynamic Drag*

**20070031009** NASA Langley Research Center, Hampton, VA USA
**Flight Test of a 40-Foot Nominal Diameter Disk-Gap-Band Parachute Deployed at a Mach Number of 2.72 and a Dynamic Pressure of 9.7 Pounds per Square Foot**
Eckstrom, Clinton V.; Preisser, John S.; November 1968; In English; See also 19680020521; See also NASA-TM-X-1623; Originally recorded in 16mm, Silent, Color, 111ft., 3min.; DVD produced from the original 16mm recording
Report No(s): L-1006; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

A 40-foot-nominal-diameter (12.2 meter) disk-gap-band parachute was flight tested as part of the NASA Supersonic Planetary Entry Decelerator (SPED-I) Program. The test parachute was deployed from an instrumented payload by means of a deployment mortar when the payload was at an altitude of 158,500 feet (48.2 kilometers), a Mach number of 2.72, and a free-stream dynamic pressure of 9.7 pounds per foot(exp 2) (465 newtons per meter(exp 2)). Suspension line stretch occurred 0.46 second after mortar firing and the resulting snatch force loading was -8.lg. The maximum acceleration experienced by the payload due to parachute opening was -27.2g at 0.50 second after the snatch force peak for a total elapsed time from mortar firing of 0.96 second. Canopy-shape variations occurred during the higher Mach number portion of the flight test (M greater than 1.4) and the payload was subjected to large amplitude oscillatory loads. A calculated average nominal axial-force coefficient ranged from about 0.25 immediately after the first canopy opening to about 0.50 as the canopy attained a steady inflated shape. One gore of the test parachute was damaged when the deployment bag with mortar lid passed through it from behind approximately 2 seconds after deployment was initiated. Although the canopy damage caused by the deployment bag penetration had no apparent effect on the functional capability of the test parachute, it may have affected parachute performance since the average effective drag coefficient of 0.48 was 9 percent less than that of a previously tested parachute of the same configuration.
Author
*Parachutes; Flight Tests; Supersonic Speed; Loads (Forces); Aerodynamic Characteristics*

**20070031013** NASA Langley Research Center, Hampton, VA USA
**Drag Characteristics of Several Towed Decelerator Models at Mach 3**
Miserentino, Robert; Bohon, Herman L.; February 1970; In English; See also 19700017623; See also NASA-TN-D-5750; Originally recorded in 16mm, Silent, Black & White, 70ft., 1.75min.; DVD produced from the original 16mm recording
Report No(s): L-1075; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

An investigation has been made to determine the possibility of using toroid-membrane and wide-angle conical shapes as towed decelerators. Parameter variations were investigated which might render toroid-membrane models and wide-angle-cone models stable without loss of the high drag coefficients obtainable with sting-mounted models. The parameters varied included location of center of gravity, location of the pivot between the towline and the model, and configuration modifications of the aft end as the addition of a corner radius and the addition of a skirt. The toroid membrane can be made into a stable towed decelerator with a suitable configuration modification of the aft end.
Author
*Aerodynamic Brakes; Conical Shells; Towed Bodies; Wind Tunnel Tests; Toroids*

## 03
## AIR TRANSPORTATION AND SAFETY

Includes passenger and cargo air transport operations; airport ground operations; flight safety and hazards; and aircraft accidents. Systems and hardware specific to ground operations of aircraft and to airport construction are covered in 09 Research and Support Facilities (Air). Air traffic control is covered in 04 Aircraft Communications and Navigation. For related information see also 16 Space Transportation and Safety and 85 Technology Utilization and Surface Transportation.

**20040081155** NASA Langley Research Center, Hampton, VA, USA
**Pilot in Command: An Illustration of Autonomous Flight Management**
Wing, David J.; Ponthieux, Joseph G.; June 2004; In English
Contract(s)/Grant(s): WU 23-727-01-10; No Copyright; Avail: CASI: V01, Videotape-VHS: B01, Videotape-Beta

Several years of NASA research have produced the concept for air traffic management called ‘Distributed Air/Ground Traffic Management,’ a major operational advancement that should significantly increase the capacity of the National Airspace System. A key component, ‘Autonomous Flight Management,’ introduces a new class of aircraft operations in which pilots are authorized to freely maneuver and execute optimal trajectories independent from air traffic controllers. These aircraft operators would benefit from significant increases in flexibility to optimize all flight operations and from avoiding most of the delays associated with ground-controlled operations. Responsibilities for aircraft separation and arrival flow conformance are transferred to the flight deck, and the pilots use computerized decision-support tools to accomplish these tasks. A research prototype of these tools called the ‘Autonomous Operations Planner’ is being developed at the NASA Langley Research Center. This 14-minute video illustrates Autonomous Flight Management from the airline pilot’s perspective.
CASI
*Decision Support Systems; Aircraft Landing; Flight Plans; Air Traffic Control*

## 05
## AIRCRAFT DESIGN, TESTING AND PERFORMANCE

Includes all stages of design of aircraft and aircraft structures and systems. Also includes aircraft testing, performance and evaluation, and aircraft and flight simulation technology. For related information see also 18 Spacecraft Design, Testing and Performance and 39 Structural Mechanics. For land transportation vehicles see 85 Technology Utilization and Surface Transportation.

**19950004299** NASA Dryden Flight Research Center, Edwards, CA, USA
**F-18 HARV presentation for industry**
May 1, 1993; In English
Report No(s): NASA-TM-104283; NONP-NASA-VT-94-23631; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS

This video provides a look at some work done by Dryden’s F-18 High Alpha Research Vehicle (HARV) in cooperation with the USA Navy and industry.
DFRC
*Angle of Attack; F-18 Aircraft; Research Aircraft*

**19950004303** NASA Dryden Flight Research Center, Edwards, CA, USA
**Research excitation system flight testing**
Mar 30, 1992; In English
Report No(s): NASA-TM-104289; NONP-NASA-VT-94-23635; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

Excitation system research at Dryden with an F-16XL aircraft is presented.
DFRC
*Excitation; F-16 Aircraft; Flight Tests; Research Aircraft*

**19950004304** NASA Dryden Flight Research Center, Edwards, CA, USA
**NASA and the SR-71: Back to the future**
Sep 9, 1991; In English
Report No(s): NASA-TM-104290; NONP-NASA-VT-94-23636; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

Presented is a musical video salute to NASA's delivery of three SR-71 aircraft for use in flight research.

DFRC
*Flight Tests; SR-71 Aircraft*

**19950004328** NASA Dryden Flight Research Center, Edwards, CA, USA
**HL-10 dedication ceremony**
Apr 3, 1990; In English
Report No(s): NASA-TM-104295; NONP-NASA-VT-94-23640; No Copyright; Avail: CASI: B03, Videotape-Beta: V03, Videotape-VHS

The dedication of NASA's HL-10 lifting body, being put on display at NASA Dryden Flight Research Center, is shown.

DFRC
*HL-10 Reentry Vehicle; Lifting Bodies*

**19950004329** NASA Dryden Flight Research Center, Edwards, CA, USA
**F-104 resource tape**
Oct 9, 1992; In English
Report No(s): NASA-TM-104296; NONP-NASA-VT-94-23641; No Copyright; Avail: CASI: B03, Videotape-Beta: V03, Videotape-VHS

This video presents raw, unedited material of Dryden's F-104 aircraft.

DFRC
*F-104 Aircraft; Research Aircraft*

**19950004330** NASA Dryden Flight Research Center, Edwards, CA, USA
**F-15 835 (HIDEC) resource tape**
Feb 1, 1993; In English
Report No(s): NASA-TM-104297; NONP-NASA-VT-94-23642; No Copyright; Avail: CASI: B04, Videotape-Beta: V04, Videotape-VHS

This video presents raw, unedited material of Dryden's F-15 Highly Integrated Digital Electronic Control (HIDEC) aircraft.

DFRC
*F-15 Aircraft; Flight Control; Research Aircraft*

**19950004331** NASA Dryden Flight Research Center, Edwards, CA, USA
**F-16XL resource tape**
Jan 28, 1993; In English
Report No(s): NASA-TM-104298; NONP-NASA-VT-94-23643; No Copyright; Avail: CASI: B04, Videotape-Beta: V04, Videotape-VHS

This video presents raw, unedited material of Dryden's F-16XL aircraft.

DFRC
*F-16 Aircraft; Research Aircraft*

**19950004332** NASA Dryden Flight Research Center, Edwards, CA, USA
**F-18 high alpha research vehicle resource tape**
Aug 11, 1992; In English
Report No(s): NASA-TM-104299; NONP-NASA-VT-94-23644; No Copyright; Avail: CASI: B04, Videotape-Beta: V04, Videotape-VHS

This video presents raw, unedited material of Dryden's F-18 High Alpha Research Vehicle (HARV) aircraft.
DFRC
*F-18 Aircraft; Research Vehicles*

**19950004333** NASA Dryden Flight Research Center, Edwards, CA, USA
**X-31 resource tape**
Aug 23, 1993; In English
Report No(s): NASA-TM-104300; NONP-NASA-VT-94-23645; No Copyright; Avail: CASI: B04, Videotape-Beta: V04, Videotape-VHS

This video presents raw, unedited material of Dryden's X-31 aircraft.
DFRC
*Research Aircraft; X-31 Aircraft*

**19950004339** NASA Dryden Flight Research Center, Edwards, CA, USA
**X-31 tailless testing**
Sep 9, 1994; In English
Report No(s): NASA-TM-104306; NONP-NASA-VT-94-23651; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video addresses the NASA Dryden and X-31 International Test Organization (ITO) testbed provided for the Pentagon's 'tailless' and quasi-tailless vehicle configuration testing.
DFRC
*Aircraft Configurations; Test Ranges; X-31 Aircraft*

**19950013578** NASA Dryden Flight Research Center, Edwards, CA, USA
**F-15 resource tape**
JAN 1, 1994; In English
Report No(s): NASA-TM-110502; NONP-NASA-VT-95-41114; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

An F-15 fighter aircraft is portrayed in resource video. A flight test is shown with take-off, touch and go landings, some flight maneuvers, and pilot to control tower communication with references to drag vectors.
CASI
*Aircraft Landing; Aircraft Maneuvers; Aircraft Performance; F-15 Aircraft; Flight Tests; Takeoff; Touchdown*

**19950013739** NASA Dryden Flight Research Center, Edwards, CA, USA
**Acoustic climb to cruise test**
Nov 27, 1991; In English
Report No(s): NASA-TM-110504; NONP-NASA-VT-95-41116; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

Flight test film footage of three different aircraft testing the acoustical noise levels during take-off, climb, maneuvers, and touch and go landings are described. These sound tests were conducted on two fighter aircraft and one cargo aircraft. Results from mobile test vehicle are shown.
DFRC
*Acoustics; Aircraft Noise; Climbing Flight; Flight Tests; Noise Intensity*

**20000033438** NASA Dryden Flight Research Center, Edwards, CA USA

**Hyper-X Model Testing with Animation**

Mar. 21, 1996; In English; Videotape: 6 min. 25 sec. playing time, in color, with partial sound

Report No(s): NONP-NASA-VT-2000043976; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

Live footage shows the Hyper-X program modeling at NASA Langley Research Center. The Hyper-X craft is shown on top of a Pegasus booster in a 20’ Mach 6 Wind Tunnel. Visualization data runs are performed in the wind tunnel. Also seen is a brief interview with Vincent Rausch the Hyper-X Program Manager. Animation includes the flight model of the Hyper-X vehicle.

CASI

*Hypersonic Flight; X-43 Vehicle; Pegasus Air-Launched Booster; Air Launching*

## 08
## AIRCRAFT STABILITY AND CONTROL

Includes flight dynamics, aircraft handling qualities, piloting, flight controls, and autopilots. For related information see also 05 Aircraft Design, Testing and Performance; and 06 Avionics and Aircraft Instrumentation.

**19950004305** NASA Dryden Flight Research Center, Edwards, CA, USA

**Radio controlled for research**

Jul 1, 1994; In English

Report No(s): NASA-TM-104292; NONP-NASA-VT-94-23637; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video presents how Dryden engineers use radio-controlled aircraft such as the 1/8-scale model F-18 High Alpha Research Vehicle (HARV) featured to conduct flight research.

DFRC

*Aircraft Models; Flight Tests; Radio Control; Research Aircraft; Scale Models*

**19950004336** NASA Dryden Flight Research Center, Edwards, CA, USA

**F-15 Propulsion Controlled Aircraft (PCA)**

Jul 1, 1993; In English

Report No(s): NASA-TM-104303; NONP-NASA-VT-94-23648; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video presentation is a news release highlighting the F-15 Highly Integrated Digital Electronic Controls (HIDEC) Propulsion Controlled Aircraft (PCA) software through June 1993 at Dryden.

DFRC

*Aircraft Control; Computer Programs; F-15 Aircraft; Flight Control*

## 09
## RESEARCH AND SUPPORT FACILITIES (AIR)

Includes airports, runways, hangars, and aircraft repair and overhaul facilities; wind tunnels, water tunnels, and shock tubes; flight simulators; and aircraft engine test stands. Also includes airport ground equipment and systems. For airport ground operations see *03 Air Transportation and Safety*. For astronautical facilities see *14 Ground Support Systems and Facilities (Space)*.

**19940014480** NASA Marshall Space Flight Center, Huntsville, AL, USA

**Technology test bed**

Aug 1, 1988; In English

Report No(s): MSFC-13306; NASA-TM-109354; NONP-NASA-VT-94-198201; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video details the renewed use of the massive rocket propulsion test stand at Marshall Space Flight Center, first used

to test Saturn 5 rockets during the Apollo Program. The test stand can incorporate over 600 sensors during test firings of the Space Shuttle's main engines, which will result in increased safety and reliability, and reduced production costs.
CASI
*Engine Tests; Performance Tests; Propulsion System Performance; Saturn 5 Launch Vehicles; Space Shuttle Main Engine; Spacecraft Propulsion; Test Firing; Test Stands*

**19950004298** NASA Dryden Flight Research Center, Edwards, CA, USA
**Dryden overview for schools**
Feb 28, 1992; In English
Report No(s): NASA-TM-104282; NONP-NASA-VT-94-23630; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video provides educators an overview of Dryden for students from late elementary through high school.
DFRC
*Education; General Overviews; NASA Programs; Research Facilities*

**19950004302** NASA Dryden Flight Research Center, Edwards, CA, USA
**Dryden tour tape, 1994**
Feb 1, 1994; In English
Report No(s): NASA-TM-104288; NONP-NASA-VT-94-23634; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS

This video provides an overview of NASA's Dryden Flight Research Center. This is the program shown to visitors during the tour at Dryden.
DFRC
*General Overviews; NASA Programs; Research Facilities*

**19950004326** NASA Dryden Flight Research Center, Edwards, CA, USA
**Building the Integrated Test Facility: A foundation for the future**
Oct 1, 1992; In English
Report No(s): NASA-TM-104280; NONP-NASA-VT-94-23628; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

A look at the construction and resources of Dryden's Integrated Test Facility is given.
DFRC
*NASA Programs; Test Facilities*

**19950004334** NASA Dryden Flight Research Center, Edwards, CA, USA
**The Western Aeronautical Test Range**
Aug 1, 1988; In English
Report No(s): NASA-TM-104301; NONP-NASA-VT-94-23646; No Copyright; Avail: CASI: B03, Videotape-Beta: V03, Videotape-VHS

An overview of the Western Aeronautical Test Range (WATR) and its connection to NASA Dryden is presented.
DFRC
*Test Facilities; Test Ranges*

**19950004335** NASA Dryden Flight Research Center, Edwards, CA, USA
**Dryden overview for schools**
Feb 3, 1994; In English
Report No(s): NASA-TM-104302; NONP-NASA-VT-94-23647; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video presentation gives a narrated, quick look at the Dryden Flight Research Center and the Center's various

projects. The presentation is directed toward a 6th-grade audience and emphasizes staying in school to learn the vital skills needed to succeed today.
DFRC
*Education; Research Facilities*

## 12
## ASTRONAUTICS (GENERAL)

Includes general research topics related to space flight and manned and unmanned space vehicles, platforms or objects launched into, or assembled in, outer space; and related components and equipment. Also includes manufacturing and maintenance of such vehicles or platforms. For specific topics in astronautics see *categories 13 through 20*. For extraterrestrial exploration see *91 Lunar and Planetary Science and Exploration*.

**19940010835** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**GAS highlights, 1988**
Feb 1, 1989; In English
Report No(s): GSFC-S-29; NASA-TM-109600; NONP-NASA-VT-93-190398; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS

The videotape shows highlights of GSFC's involvement in the Get Away Special program during the 1988 calendar year.
CASI
*Get Away Specials (STS); NASA Programs; Space Shuttles; Spaceborne Experiments*

**19940029060** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**Apollo 11: The Goddard connection**
Jul 1, 1989; In English
Report No(s): JSC-T-04; NASA-TM-109815; NONP-NASA-VT-94-12943; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

The history of NASA Goddard Space Flight Center's involvement in the Apollo 11 Mission to the Moon is recounted. Goddard maintained the Manned Space Flight Network, composed of ground tracking stations, and tracking stations aboard ships and airplanes, which maintained communications between the orbiter and Earth.
CASI
*Apollo Project; Histories; Manned Space Flight Network; Moon; Spacecraft Communication; Spacecraft Tracking*

**19950004306** NASA Dryden Flight Research Center, Edwards, CA, USA
**LLRV/Apollo 11 25th anniversary**
Jul 1, 1994; In English
Report No(s): NASA-TM-104293; NONP-NASA-VT-94-23638; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video salutes the 25th anniversary of the Apollo 11's landing on the moon and Dryden's contribution with the Lunar Landing Research Vehicle (LLRV) program.
DFRC
*Apollo 11 Flight; General Overviews; Lunar Landing; Lunar Landing Modules*

**20010117037** NASA Johnson Space Center, Houston, TX USA
**Apollo 11 Facts [Lunar EVA]**
Jun. 23, 1994; In English; Videotape: 1 hr. 7 min. 45 sec. playing time, in color, with sound
Report No(s): NONP-NASA-VT-2001181406; VJSC-1425M; No Copyright; Avail: CASI: B04, Videotape-Beta: V04, Videotape-VHS

Apollo 11 Commander Neil Armstrong and Lunar Module Pilot Edwin Aldrin, Jr., are seen on the surface of the Moon performing their extravehicular activities (EVAs).
CASI
*Extravehicular Activity; Moon; Apollo 11 Flight*

**20040200963** NASA, Washington, DC, USA

**To Boldly Go: The Universe Now and Beyond**

[2004]; 2 pp.; In English; 2 hrs., 1 min. playing time, in color, with sound; No Copyright; Avail: CASI: V04, Videotape-VHS

Dr. France Cordova, NASA's Chief Scientist opened this, the third session in the NASA Administrator's Seminar Series, by asking the following question: 'What would be a bold and aspiring agenda for America's next era in space?' It aimed at answering the following questions: What do we know about the universe? How do we know it? (Dr. Cordova also mentioned that the first seminar was about the definition of cellular life and how to recognize it, and featured as speakers, Dr. Lynn Margoles and Dr. Leslie Orgle.) Administrator Daniel S. Goldin was introduced; he welcomed the attendees, and remarked that NASA personnel have a critical need to explain to Congress and the public why a space program is important. Congress and the public pay for the space programs. Therefore the programs' importance cannot remain in the sole domain of scientists. The first speaker, Dr. Vera Ruben of the Department of Terrestrial Magnetism at the Carnegie Institute of Washington, was introduced as an art historian expert in cosmology and an observational astronomer. Dr. Ruben brought up a number of questions regarding the substance, location, and origin of dark matter, radiation, galaxies, and the lumpy structure of galaxies in space, as well as the age and density of our universe. The next speaker was Dr. Bohdan Paczynski, a theoretical astrophysicist from Princeton University's Department of Astrophysical Sciences. The final speaker, Dr. Linda Schale is a cosmologist from the University of Texas at Austin. She was said to be a 'paleontologist of the human mind' who tries 'to understand mechanisms people use to understand the world'. The concluding discussion centered on why NASA scientists don t communicate better with people who are not highly educated. This is a big concern because to continue its work, NASA needs to communicate the importance of its goals to the average person. Additional information is included in the original extended abstract.

Author (revised)

*NASA Space Programs; Space Exploration; Education*

**20060026108** NASA Kennedy Space Center, Cocoa Beach, FL, USA

**STS-1: Columbia Landing and Safing Operations**

April 14, 1981; In English; 50 min. playing time, in color, with sound; No Copyright; Avail: CASI: V03, Videotape-VHS: B03, Videotape-Beta

The flight monitoring operations from ground support systems for Columbia's return from space in preparation for landing in Houston is shown. Views from the chase plane along with the actual landing are shown. The touch down time was 2 days, 6 hours, 22 minutes and 52 seconds. All post landing operations are also shown.

CASI

*Space Transportation System; Ground Support Systems; Flight Operations*

**20070030988** National Advisory Committee for Aeronautics. Langley Aeronautical Lab., Langley Field, VA USA

**Apollo-Lunar Orbital Rendezvous Technique**

January 1963; In English; Originally recorded in 16mm, Sound, Color, 219ft., 5.5min.; DVD produced from the original 16mm recording

Report No(s): L-762; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)

ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The film shows artists rendition of the spacecrafts, boosters, and flight of the Apollo lunar missions. The Apollo spacecraft will consist of three modules: the manned Command Module; the Service Module, which contains propulsion systems; and the Lunar Excursion Module (LEM) to carry astronauts to the moon and back to the Command and Service Modules. The spacecraft will be launched via a three-stage Saturn booster. The first stage will provide 7.5 million pounds of thrust from five F-1 engines for liftoff and initial powered flight. The second stage will develop 1 million pounds of thrust from five J-2 engines to boost the spacecraft almost into Earth orbit. Immediately after ignition of the second stage, the Launch Escape System will be jettisoned. A single J-2 engine in the S4B stage will provide 200,000 pounds of thrust to place the spacecraft in an earth parking orbit. It also will be used to propel the spacecraft into a translunar trajectory, then it will separate from the Apollo Modules. Onboard propulsion systems will be used to insert the spacecraft into lunar orbit. Two astronauts will enter the LEM, which will separate from the command and service modules. The LEM will go into elliptical orbit and prepare for landing. The LEM will lift off of the Moon's surface to return to the Command and Service Modules, and most likely be left in lunar orbit. After leaving the Moon's orbit, and shortly before entering Earth's orbit, the Service Module will be ejected. The

Command Module will be oriented for reentry into the Earth's atmosphere. A drogue parachute will deploy at approximately 50,000 feet, followed by the main parachute system for touchdown.
Derived from text
*Apollo Spacecraft; Lunar Orbits; Earth Orbits; Spacecraft Modules; Lunar Landing; Saturn Launch Vehicles; Spacecraft Reentry*

## 13
## ASTRODYNAMICS

Includes powered and free flight trajectories; orbital and launching dynamics.

**20070030976** NASA Langley Research Center, Hampton, VA USA
**Simulator Study of Lunar Orbit Establishment**
June 1965; In English; 16mm, Silent, Black & White, 250ft., 6.75min.; DVD produced from the original 16mm recording
Report No(s): L-876; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The film was made using the Lunar Orbit and Landing Approach Simulator (LOLA). It represents the view an astronaut would see if he were looking toward the lunar horizon just prior to and during retrofire for orbit establishment. During this period the astronaut is essentially flying backward, therefore the lunar surface features appear to be moving away during the flight.
Derived from text
*Lunar Orbits; Lunar Surface; Lunar Orbit and Landing Simulators; Lunar Landing*

## 14
## GROUND SUPPORT SYSTEMS AND FACILITIES (SPACE)

Includes launch complexes, research and production facilities; ground support equipment, e.g., mobile transporters; and test chambers and simulators. Also includes extraterrestrial bases and supporting equipment. For related information see also *09 Research and Support Facilities (Air)*.

**19940010797** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**GFSC-TV demo tape**
Jan 1, 1989; In English
Report No(s): GSFC-S-32; NASA-TM-109586; NONP-NASA-VT-93-190384; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This demonstration tape produced by and for the Goddard Space Flight Center Television facility shows some of the capabilities of this state of the art facility that are available to projects at Goddard.
CASI
*Research Facilities; Test Facilities*

**19940010800** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**Stock footage of Goddard Space Flight Center and Headquarters**
Jun 1, 1989; In English
Report No(s): GSFC-S-36; NASA-TM-109589; NONP-NASA-VT-93-190387; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS

Produced for Century Teleproductions in Boston, MA this video is a camera master showing various views, with natural sound, of the space flight center during the late spring. This finished footage is used in an interactive laser disc presentation that is used at Kennedy Space Center Visitor Center.
CASI
*NASA Space Programs; Research Facilities*

## 15
## LAUNCH VEHICLES AND LAUNCH OPERATIONS

Includes all classes of launch vehicles, launch/space vehicle systems, and boosters; and launch operations. For related information see also *18 Spacecraft Design, Testing and Performance*; and *20 Spacecraft Propulsion and Power*.

**19950007287** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**Delta, America's space ambassador**
Oct 1, 1994; In English
Report No(s): NASA-TM-110046; NONP-NASA-VT-94-29868; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS

This video presentation features the major satellites launched by the Delta rocket in a celebration of this dependable launch vehicle's past.
GSFC
*Delta Launch Vehicle; Space Programs*

**19950011735** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**Meteor 3/TOMS launch of 15 August 1991 in Plesetsk, USSR**
Aug 3, 1994; In English
Report No(s): NASA-TM-110115; NONP-NASA-VT-95-37004; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

The TOMS launch of August 15, 1991, was a joint effort between the U.S.S.R. and the USA. The pre-launch briefing, a tour of the TOMS storage site, it's delivery and setup at the launch site, and the actual launch were viewed in this video, along with a post-launch conference and a dinner. The launch occurred in Plesetsk, U.S.S.R., with the TOMS payload being launched on a Soviet Meteor. Officials from NASA were present for the launch.
CASI
*Atmospheric Circulation; International Cooperation; Liftoff (Launching); Meteorological Satellites; Ozone Depletion; Payloads; Total Ozone Mapping Spectrometer*

**20060026166** NASA Kennedy Space Center, Cocoa Beach, FL, USA
**STS-121/Discovery L-3 Countdown Status Briefing**
June 28, 2006; In English; 31 min., 43 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V03, Videotape-VHS: B03, Videotape-Beta

The briefing started with opening remarks from George Diller (NASA Public Affairs). Jeff Spaulding (NASA Test Director) discussed the Shuttle launch status and the return to the International Space Station 12 day mission. Debbie Hahn (STS-121 Payload Manager) discussed the installation of mid-decks on ISS and the 2 tons of cargo (mainly crew supplies and food) and the oxygen regeneration system. Kathy Winters (Shuttle Weather Officer) discussed the weather forecast for the launch. The team also answered questions from the press.
CASI
*Spacecraft Launching; Space Transportation System; Countdown; Cargo; Oxygen Supply Equipment; Payloads; International Space Station*

**20060026224** NASA Kennedy Space Center, Cocoa Beach, FL, USA
**Exploration Update**
June 30, 2006; In English; 38 min., 22 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V03, Videotape-VHS: B03, Videotape-Beta

Delores Beasley, NASA Public Affairs, introduces the panel who consist of: Scott 'Doc' Horowitz, Associate Administrator of Exploration Systems from NASA Headquarters; Jeff Henley, Constellation Program Manager from NASA Johnson Space Flight Center; and Steve Cook, Manager Exploration Launch Office at NASA Marshall Space Flight Center. Scott Horowitz presents a short video entitled, 'Ares Launching the Future'. He further explains how NASA personnel came up with the name of Ares and where the name Ares was derived. Jeff Henley, updates the Constellation program and Steve

Cook presents two slide presentations detailing the Ares l crew launch vehicle and Ares 5 cargo launch vehicle. A short question and answer period from the news media follows.
CASI
*Launch Vehicles; Space Exploration; Cargo Spacecraft; NASA Space Programs*

**20060026226** NASA Kennedy Space Center, Cocoa Beach, FL, USA
**STS-121: Discovery Launch Postponement MMT Briefing**
July 02, 2006; In English; 34 min., 18 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V03, Videotape-VHS: B03, Videotape-Beta

Bruce Buckingham from NASA Public Affairs introduces the panel who consist of: John Shannon, MMT chairman JSC; Mike Leinbach, NASA Launch Director; and 1st Lieutenant Kaleb Nordren, USAF 45th Weather Squadron. An opening statement is given from John Shannon on the postponement of the launch due to thunderstorms. Mike Leinbach also elaborates on the weather and talks about scrubbing two hours early, draining the vehicle, and reloading the hydrogen for the fuel cells for a possible launch attempt on Tuesday morning. Norden gives his weather forecast for Tuesday and Wednesday. Questions from the media on launch attempts, weather, and the cost of the scrub are addressed.
CASI
*Space Transportation System; Spacecraft Launching; Discovery (Orbiter); NASA Space Programs*

**20060026230** NASA Kennedy Space Center, Cocoa Beach, FL, USA
**STS-121/Discovery: Launch Readiness Press Conference**
June 29, 2006; In English; 1 hr., 1 min., 48 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V04, Videotape-VHS: B04, Videotape-Beta

Participants in the briefing included: Bruce Buckingham (NASA Public Affairs), John Shannon (Chairman, Mission Management Team), Mike Suffredini (ISS Program Manager), Mike Leinbach (Shuttle Launch Director), Alan Thirkettle (ISS Program Manager, ESA) and 1st Lt. Kaleb Nordgen (USAF 45th Weather Squadron). There are no constraints to launch except for questionable weather. The crew is ready to go. PROGRESS has provided logistics and is ready to be installed. No cryogenics have been loaded because of a Phase 1 lightning advisory. The shuttle crew is in good shape, just waiting for the weather to clear. ISS is making preparations for the Columbus Mission and future plans are to increase the crew from 3 to 6 people. The floor was opened to questions from the press.
CASI
*Space Transportation System; Spacecraft Launching; Spacecrews; Space Shuttle Orbiters; Cryogenics; Logistics; Lightning*

**20070030963** NASA Langley Research Center, Hampton, VA USA
**USA Space Explorations 1958**
April 03, 1962; In English; Originally recorded in 16mm, Sound, Color, 690ft., 19min.; DVD produced from the original 16mm recording
Report No(s): L-703; HQ-8; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The film describes preparation and launch of five satellites and two space probes during 1958. On January 31, a Jupiter vehicle launched Explorer I into space. Data from this satellite was used to identify the van Allen radiation belts. On March 17, a Vanguard I rocket launched an Earth satellite with solar batteries. Data from the mission was used to determine that the Earth is slightly pear-shaped. On March 26, Explorer III was launched to further study the van Allen belts, micrometeoroid impacts, and internal and external temperatures. Explorer IV, launched on July 26, was intended to study radiation and temperature data. A lunar probe, ABLE I, was intended to measure radiation, magnetic fields of Earth and the Moon, density of micrometeoric matter, and internal temperatures. A four-stage rocket was used in the launch. However, a turbo-pump failed and the liquid oxygen pump stopped, resulting in a failed mission. On October 10, Pioneer I was launched by an ABLE vehicle. First and second stage velocity was less than desired and the probe did not leave Earth orbit. Attempts to attain escape velocity were unsuccessful. On December, a Jupiter boost vehicle was used to launch Juno II, with Pioneer III as the payload. Escape velocity was reached and Pioneer III left Earth's atmosphere. Failed launches, such as those of Vanguard boost vehicles and several Explorer satellites, also added to scientific knowledge.
CASI
*United States; Rocket Launching; Launch Vehicles; NASA Space Programs; Space Exploration*

**20070030984** NASA Langley Research Center, Hampton, VA USA

**Launch Vehicle Dynamics Demonstrator Model**

June 1963; In English; Originally recorded in 16mm, Silent, Color, 125ft., 3min.; DVD produced from the original 16mm recording

Report No(s): L-789; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)

ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The effect of vibration on launch vehicle dynamics was studied. Conditions included three modes of instability. The film includes close up views of the simulator fuel tank with and without stability control.

Derived from text

*Launch Vehicles; Stability Tests; Vibration Effects; Rocket Launching*

## 16
## SPACE TRANSPORTATION AND SAFETY

Includes passenger and cargo space transportation, e.g., shuttle operations; and space rescue techniques. For related information see also *03 Air Transportation and Safety; 15 Launch Vehicles and Launch Operations*; and *18 Spacecraft Design, Testing and Performance*. For space suits see *54 Man/System Technology and Life Support*.

**19940014481** NASA Marshall Space Flight Center, Huntsville, AL, USA

**Shuttle-C, the future is now**

Feb 1, 1989; In English

Report No(s): MSFC-14261; NASA-TM-109355; NONP-NASA-VT-94-198202; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video details plans for Shuttle-C, an unmanned heavy launch vehicle to carry payloads into orbit. Computer animations depict the Shuttle-C, which uses the same recoverable external boosters, external fuel tank and main orbiter engines as the existing Space Shuttles, through liftoff and entry into orbit, where it progressively jettisons the cargo shroud, external fuel tank, and nose shroud. The video also shows computer simulations of a remotely controlled orbital maneuvering vehicle positioning preassembled components of a Space Station and delivering planetary probes and lunar exploration materials to orbit.

CASI

*Computer Animation; Heavy Lift Launch Vehicles; Orbital Assembly; Orbital Maneuvering Vehicles; Shuttle Derived Vehicles; Space Exploration; Space Stations; Spacecraft Design*

**19940014598** NASA Marshall Space Flight Center, Huntsville, AL, USA

**Pathfinder: Shuttle exhibit**

Aug 1, 1988; In English

Report No(s): MSFC-13239; NASA-TM-109357; NONP-NASA-VT-94-198204; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video introduces the Pathfinder Shuttle Exhibit, a joint project between the Marshall Space Flight Center and the State of Alabama's Space and Rocket Center in Huntsville. The exhibit features a never flown Shuttle vehicle, Pathfinder, that was used in early ground tests in the Shuttle Program, as well as an actual external fuel tank and set of booster rockets. The video includes footage of actual launches, the Pathfinder Shuttle Exhibit, and shots of the Space Camp at Alabama's Space and Rocket Center.

CASI

*Museums; Space Shuttle Orbiters*

**19940029282** NASA, Washington, DC, USA

**Shuttle 51L: Challenger**

JAN 1, 1994; In English

Report No(s): NASA-TM-109835; NONP-NASA-VT-94-12963; No Copyright; Avail: CASI: B03, Videotape-Beta: V03, Videotape-VHS

This video follows the pre-launch and launch of the Space Shuttle Challenger preceding the accident. It then details the accident investigation report.
CASI
*Accident Investigation; Challenger (Orbiter); Space Shuttle Mission 51-L; Spacecraft Launching*

**20000033439** NASA Dryden Flight Research Center, Edwards, CA USA
**X-34 Captive Carry & Seunghee Lee Interview**
Jun. 29, 1999; In English; Videotape: 5 min. 42 sec. playing time, in color, with sound
Report No(s): NONP-NASA-VT-2000043975; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS
Live footage shows the rollout of the aircraft carrying the X-34. Also shown are the taxing of the aircraft and takeoff. The NASA Dryden X-34 Project Manager is also shown during an interview.
CASI
*X-34 Reusable Launch Vehicle; Air Launching; Pegasus Air-Launched Booster; Research Vehicles; Research and Development*

**20000033440** NASA Dryden Flight Research Center, Edwards, CA USA
**X-38 Phase 3 Drops V-132 FF#3**
Mar. 30, 2000; In English; Videotape: 43 min. playing time, in color, without sound
Report No(s): NONP-NASA-VT-2000043892; No Copyright; Avail: CASI: B03, Videotape-Beta: V03, Videotape-VHS
Live footage shows the drop of the X-38 vehicle. Also shown are parachute deployments from various cameras.
CASI
*X-38 Crew Return Vehicle; Research Vehicles; Research and Development*

**20000033833** NASA Dryden Flight Research Center, Edwards, CA USA
**X-43 Composite Tape**
Dec. 16, 1999; In English; Videotape: 7 min. 26 sec. playing time, in color, with sound
Report No(s): NONP-NASA-VT-2000045251; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS
Live footage shows Project Manager Joel Sitz participating in an interview about the X-43 project. Sitz mentions several tests that will be performed on the X-43. He also mentions that the main objective of this project is to validate the design code for hypersonic air breathing vehicles. He discusses the projected data collection to prove that the predictions that were made in the laboratories and wind tunnels are correct. Scenes include the roll of the X-43 and an animation of the flight.
CASI
*X-43 Vehicle; Hypersonic Flight; Air Breathing Boosters; Air Breathing Engines; Airframes*

**20000033861** NASA Dryden Flight Research Center, Edwards, CA USA
**X-33, X-34, X-37 Press Conference (Tape 2)**
Aug. 24, 1999; In English; Videotape: 34 min. playing time, in color, with sound
Report No(s): NONP-NASA-VT-2000043974; No Copyright; Avail: CASI: B03, Videotape-Beta: V03, Videotape-VHS
Live footage shows Project Managers Susan Turner, MSFC and David Manley, Boeing Co. participating in the X-37 Briefing. NASA's Public Affairs June Malone introduced these panelists who went on to discuss the vehicle and its secondary payload. Manley mentions the X-37 capabilities, main propulsion system, its lithium iron batteries, hot control surfaces, and its fly by wire system. Turner mentions the on-board operations, the deployment of the solar arrays, and the autonomous navigation and landing system. Also included is an animation of the X-37 vehicle during flight and the secondary payload release into orbit.
CASI
*X-37 Vehicle; Reusable Launch Vehicles; Recoverable Launch Vehicles; Conferences*

**20000118264** NASA Kennedy Space Center, Cocoa Beach, FL USA

**STS-38 Rollback from Pad A to VAB**

Aug. 09, 1990; In English; Videotape: 13 min. 46 sec. playing time, in color, with sound (no narration)

Report No(s): NONP-NASA-VT-2000113523; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

Footage is shown of the slow rollback of Atlantis, travelling from pad A to the Vehicle Assembly Building (VAB).
CASI

*Atlantis (Orbiter); Space Shuttles*

**20060026103** NASA Kennedy Space Center, Cocoa Beach, FL, USA

**STS-121: Discovery Post Flight Readiness Review Briefing**

June 17, 2006; In English; 50 min. playing time, in color, with sound; No Copyright; Avail: CASI: V03, Videotape-VHS: B03, Videotape-Beta

This post Flight Readiness Review (FRR) briefing begins with NASA Press Secretary Dean Acosta, introducing the panel who consist of: NASA Administrator, Dr. Michael Griffin; Associate Administrator for Space Operations, Bill Gerstenmaier; Space Shuttle Program Manager, Wayne Hale; and NASA Launch director, Mike Leinbach. The discussion begins with Dr. Michael Griffin, who expresses his gladness to be a part of the FRR. Bill Gerstenmaier talks about how they were very thorough about the subjects reviewed and that they wanted to make sure that they were ready to fly. He discusses and presents two slides. The first slide is a description of the LO2 intertank and LH2 ice/frost ramps staging location and the second are the top ten LH2 Ice/Frost Ramp Foam Loss events. Wayne Hale gives his thoughts on the human element that came into play during the FRRs. He talks about the willingness of everyone to speak their mind, instead of giving short comments. He expressed that this element is a huge step forward for NASA. Mike Leinbach reports on the processing of the vehicle and expresses that everything is going well and there is nothing to prohibit the launch. He also gives a good report on Atlantis, in case there is a need to use the vehicle. This FRR briefing ends with a short question and answer period from the press on topics such as debris, foam loss, ice/frost ramp redesign, crew risks, and launch date.
CASI

*Discovery (Orbiter); Space Transportation System; Postflight Analysis; Space Shuttles; NASA Space Programs*

**20060026104** NASA Kennedy Space Center, Cocoa Beach, FL, USA

**STS-1: Columbia Complete Mission**

April 1981; In English; 40 min. playing time, in color, with sound; No Copyright; Avail: CASI: V03, Videotape-VHS: B03, Videotape-Beta

A video presentation of the STS-1 Columbia Mission is shown. The video begins with footage of the STS-1 Columbia arriving at Kennedy Space Center on March 24, 1979. The various milestones that were shown include: 1) STS-1 Columbia Shuttle Rocket Booster (SRB) stacking; 2) External Tank (ET) lift and mating; 3) Move to VAB and Mating; 4) Rollout to pad 39A; 5) Flight Readiness Firing (FRF) on February 19, 1981; 6) Launch day; and 7) Return to Kennedy Space Center. John W. Young, Commander and Robert L. Crippen, Pilot are shown having a traditional breakfast before the suit up and drive out to the launch pad. Footage of the lift-off along with Shuttle Rocket Booster (SRB) separation is shown. After lift-off, there is a shot of the crew in the mid-deck and also a view of thunderstorms over the Amazon Basin. The video ends with a view of Columbia returning to Kennedy Space Center on April 25, 1981.
CASI

*Booster Rocket Engines; Space Transportation System 1 Flight; Space Missions; NASA Space Programs; Columbia (Orbiter)*

**20060026107** NASA Kennedy Space Center, Cocoa Beach, FL, USA

**STS-1: Columbia Pre-Launch Press Conference with Young/Crippin**

April 14, 1981; In English; 48 min. playing time, in color, with sound; No Copyright; Avail: CASI: V03, Videotape-VHS: B03, Videotape-Beta

Commander John Young and pilot Bob Crippin show a short film about the 2 and 1/2 day space mission which encompasses 170 flight objectives. Following the film, they answer questions from the press which cover topics ranging from ejection systems to solid rocket fuels.
CASI

*Space Transportation System; Solid Rocket Propellants; Space Missions; Ejection*

**20060026134** NASA Kennedy Space Center, Cocoa Beach, FL, USA

**STS-1: Columbia Briefings**

[2006]; In English; 1 hr., 24 min. playing time, in color, with sound; No Copyright; Avail: CASI: V04, Videotape-VHS: B04, Videotape-Beta

A video presentation on an update of the STS-1 Columbia Shuttle is shown. Hugh Harris is the moderator. He introduces Don Phillips, Chief STS Test OPS, who presents the status of the vehicle. Terry William, Chief of Mechanical Systems, discusses the debonding of the panels. A question and answer period from the news media is shown. The various topics of discussion from the news media include: 1) Repair of thermal tiles; 2) Launch dates; and 3) Landing and launch sites and 4) Low pressure/high pressure tanking tests. An audio presentation is given of questions from NASA Marshall Space Flight Center and NASA Washington. On March 12, 1981, another STS-1 Columbia update is shown. Bob Schick, Shuttle Test Director, and Bob Sieck, Flight Project Engineer answers questions about the actual repair time of the panels and a very detailed description of the three areas of debonding is presented. A brief launch date statement from Dr. Allen Lovelace, Acting NASA Administrator is given and John Lardley, Shuttle Associate Director, discusses the flight readiness review.

CASI

*Space Transportation System 1 Flight; Columbia (Orbiter); Space Shuttles; NASA Space Programs; Spacecraft Launching*

**20060026151** NASA Kennedy Space Center, Cocoa Beach, FL, USA

**STS-121: TCDT (Terminal Countdown Demonstration Test) Compilation**

June 16, 2006; In English; No Copyright; Avail: CASI: V04, Videotape-VHS: B04, Videotape-Beta

STS-121/Discovery Flight Crew; Steve Lindsey(Commander), Mark Kelley(pilot), Mike Fossum, Lisa Nowak, Stephanie Nowak, Pierce Sellers, and Thomas Ryder completed the TCDT. The activities consisted of 1) Crew Arrival; 2) Pad 39B Media Event; 3) STA Flights at SLF; 4) Pad Walkdown and Slidewire; 5) Breakfast, Suiting, Walkout; 6) Crew Ingress in Orbiter; 7) Crew Egress and Slidewire; 8) M-113 Training; 9) Crew Payload Inspection; and 10) Crew Departure fro the SLF.

CASI

*Countdown; Discovery (Orbiter); Space Transportation System Flights; Spacecrews; Space Transportation System*

**20060026153** NASA Kennedy Space Center, Cocoa Beach, FL, USA

**STS-121: Discovery End of Mission Crew Briefing**

July 17, 2006; In English; 39 min., 11 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V03, Videotape-VHS: B03, Videotape-Beta

The crew of the STS-121 Discovery mission is shown during this end of mission briefing. The crewmembers consist of: Stephanie Wilson, mission specialist; Steve Lindsey, commander; Lisa Nowak, mission specialist; Piers Sellers, mission specialist; Mike Fossum, mission specialist; and Mark Kelly, pilot. The briefing opens with Commander Lindsey describing the two major objectives of this mission, which are to accomplish the rest of the return to flight objectives started by STS-114, and to increase the ISS crew to three. He expresses that these objectives were fulfilled. A question and answer period from the news media follows. Lisa Nowak talks about robotics and her experiences during her first flight. Stephanie Wilson also discusses robotics and gives her thoughts about spaceflight. Steve Lindsey discusses the flying qualities of STS-121, spacecraft landing, and weather conditions while in space. Mark Kelly was responsible for the undocking of the Shuttle from the International Space Station, and he elaborates on this process. Spacewalkers Piers Sellers and Mike Fossum discuss testing of the Orbiter Boom Sensor System (OBSS). This system will be used as a platform to make repairs to the Space Shuttle.

CASI

*International Space Station; Space Shuttle Missions; Spacecrews; Discovery (Orbiter); Space Transportation System*

**20060026155** NASA Kennedy Space Center, Cocoa Beach, FL, USA

**STS-121: Crew Activities**

2006; In English; 38 min., 38 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V03, Videotape-VHS: B03, Videotape-Beta

STS-121/Discovery Flight Crew; Steve Lindsey(Commander), Mark Kelley(pilot), Mike Fossum, Lisa Nowak, Stephanie Nowak, Pierce Sellers, and Thomas Ryder performed the following activities: 1) Crew equipment interface test at SSPF; 2) Crew equipment interface test at Kennedy Space Center; and Payload Crew equipment interface test in SSPF.

CASI

*Spacecrews; Space Transportation System; Discovery (Orbiter); Space Transportation System Flights*

**20060026165** NASA Kennedy Space Center, Cocoa Beach, FL, USA

**STS-121/Discovery Preflight Briefing Program Overview**

June 08, 2006; In English; 1 hr., 8 min., 11 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V04, Videotape-VHS: B04, Videotape-Beta

Wayne Hale (Space Shuttle Program Manager) opens with a short video of the external tank operation and the Shuttle roll out to the launch pad. Kirk Shireman (International Space Station Program Deputy Manager) shows a video of International Space Station activities which included replacement of the remote power switch, unloading of cargo, Earth observation (over 23,000 photos taken), exercises, and replacement of the Camera during a spacewalk.

CASI

*International Space Station; Space Transportation System; Space Shuttles; Earth Observations (From Space); Cargo; Extravehicular Activity; External Tanks*

**20060026225** NASA Kennedy Space Center, Cocoa Beach, FL, USA

**Space Shuttle Status News Conference**

October 14, 2005; In English; 55 min. playing time, in color, with sound; No Copyright; Avail: CASI: V03, Videotape-VHS: B03, Videotape-Beta

Richard Gilbech, External Tank 'Tiger Team' Lead, begins this space shuttle news conference with detailing the two major objectives of the team. The objectives include: 1) Finding the root cause of the foam loss on STS-114; and 2) Near and long term improvements for the external tank. Wayne Hale, Space Shuttle Program Manager, presents a chart to explain the external tank foam loss during STS-114. He gives a possible launch date for STS-121 after there has been a repair to the foam on the External Tank. He further discusses the changes that need to be made to the surrounding areas of the plant in New Orleans, due to Hurricane Katrina. Bill Gerstemaier, NASA Associate Administrator for Space Operations, elaborates on the testing of the external tank foam loss. The discussion ends with questions from the news media about a fix for the foam, replacement of the tiles, foam loss avoidance, the root cause of foam loss and a possible date for a new external tank to be shipped to NASA Kennedy Space Center.

CASI

*External Tanks; Space Shuttles; Space Transportation System; NASA Space Programs*

**20060026227** NASA Kennedy Space Center, Cocoa Beach, FL, USA

**STS-121/Discovery: Imagery Quick-Look Briefing**

July 04, 2006; In English; 43 min., 29 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V03, Videotape-VHS: B03, Videotape-Beta

Kyle Herring (NASA Public Affairs) introduced Wayne Hale (Space Shuttle Program Manager) who stated that the imagery for the Space shuttle external tank showed the tank performed very well. Image analysis showed small pieces of foam falling off the rocket booster and external tank. There was no risk involved in these minor incidents. Statistical models were built to assist in risk analysis. The orbiter performed excellently. Wayne also provided some close-up pictures of small pieces of foam separating from the external tank during launching. He said the crew will also perform a 100% inspection of the heat shield. This flight showed great improvement over previous flights.

CASI

*Space Transportation System; External Tanks; Foams; Heat Shielding; Image Analysis; Risk*

**20060026228** NASA Kennedy Space Center, Cocoa Beach, FL, USA

**STS-121/Discovery: Mission Status Briefing**

July 05, 2006; In English; 24 min., 10 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V02, Videotape-VHS: B02, Videotape-Beta

Tony Ceccacci (Space Shuttle Flight Director) discussed the following activities: starboard survey, two space rendezvous, nose cap survey, timelines. Rick LaBrode (International Space Station Flight Director) discussed the following activities: preparation for Shuttle Docking, leak checks, pressurization checks, final configuration for cameras, setting up the internal wireless information system, accelerometers, etc. Then the floor was open to questions from the press.

CASI

*International Space Station; Space Transportation System Flights; Space Shuttle Missions; Space Rendezvous; Cameras; Docking; Information Systems; Space Shuttles*

**20060026276** NASA Kennedy Space Center, Cocoa Beach, FL, USA
**Space Shuttle Program Update News Conference with Wayne Hale**
February 28, 2006; In English; 1 hr., 1 min., 32 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V04, Videotape-VHS: B04, Videotape-Beta

Jessica Rye from NASA Public Affairs introduces: Wayne Hale, Space Shuttle Deputy Program Manager; Mike Leinbach, NASA Launch Director; and Tim Wilson, from the NASA Engineering and Safety Center. Hale begins the discussion with a video showing the following processes: 1) Changing of gap fillers at Orbiter Processing Facility; 2) The Orbiter Boom Sensor System (OBSS) being loaded into Discovery payload bay; 3) Engine installation; 4) Spacecrew at Michoud Assembly observing the area where the PAL ramps were removed; 5) Test being performed to mitigate liquid air forming underneath foam; and 6) Roll out of ET119 from New Orleans. Hale also presents a slide of the ET debris Mitigation Activities and ET Ice/Frost Ramps. Mike Leinbach says that Kennedy Space Center is ready to receive the tank and that he is ready to get on with the mission. Tim Wilson heads the team to resolve foam loss issues which is his primary goal before this flight. A question and answer period follows.
CASI
*Space Shuttles; Space Transportation System; NASA Space Programs; External Tanks; Discovery (Orbiter)*

**20060026409** NASA Kennedy Space Center, Cocoa Beach, FL, USA
**Space Shuttle Program Update**
May 31, 2006; In English; 1 hr., 1 min., 30 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V04, Videotape-VHS: B04, Videotape-Beta

Bruce Buckingham, from NASA Public Affairs, introduces Wayne Hale, Space Shuttle Program Manager, and Mike Leinbach, NASA launch Director. Wayne Hale begins discussing the Flight Readiness Review (FRR) that has just occurred to see if they were ready to fly. He points out that the review was a debris verification review (DVR). This review was done to ascertain how well they have done to eliminate the potential for debris to come off of the External Tank (ET), or any other part of the launch vehicle. He expresses that they have made significant improvements to the ET. He gives a description of the ET that is presently on the launch pad. Mike Leinbach discusses hardware processing and the condition of the launch vehicle. Questions from the news media about possible modifications to the ice frost ramp, Solid Rocket Booster (SRB) electrical problems, ET foam loss, amount of debris loss expectation during ascent, and return to flight costs are all addressed.
CASI
*External Tanks; NASA Space Programs; Launch Vehicles; Space Shuttle Boosters; Discovery (Orbiter)*

**20060026410** NASA Kennedy Space Center, Cocoa Beach, FL, USA
**STS-121: Discovery Pre-Flight Crew News Briefing**
June 08, 2006; In English; 44 min., 41 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V03, Videotape-VHS: B03, Videotape-Beta

The STS-121 crew is shown during this pre-flight news briefing. Steve Lindsey, Commander, begins with saying that they are only a few weeks from flight and the vehicle is in good shape. Mark Kelly, Pilot, is introduced by Lindsey and he discusses Kelly's main objective which is to direct the three spacewalks scheduled. Kelly introduces Mike Fossum, Mission Specialist. Kelly says that Fossum will be involved in three spacewalks. Fossum introduces Lisa Nowak, Mission Specialist, who is involved in robotics. Also Stephanie Wilson, Mission Specialist, will be involved in robotics. Piers Sellers, Mission Specialist, is introduced by Wilson, who is the lead spacewalker for this mission. Sellers then introduce Thomas Reiter, Mission Specialist, who is involved in spacewalks. The educational background of each crew member is given. Questions from the news media on the subjects of long term flights on the International Space Station, Ice frost ramp replacement, Orbiter Boom Sensor System (OBSS) stability, foam loss during STS-114 flight, duration of the mission, and mental preparation for test flights are addressed.
CASI
*Discovery (Orbiter); Flight Crews; Flight Tests; Space Transportation System Flights*

**20060027245** NASA Kennedy Space Center, Cocoa Beach, FL, USA

**STS-121: Discovery L-1 Countdown Status Briefing**

June 30, 2006; In English; 29 min., 21 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V02, Videotape-VHS: B02, Videotape-Beta

Bruce Buckingham, NASA Public Affairs, introduces Jeff Spaulding, NASA Test Director; Debbie Hahn, STS-121 Payload Manager; and Kathy Winters, Shuttle Weather Officer. Spaulding gives his opening statement on this one day prior to the launching of the Space Shuttle Discovery. He discusses the following topics: 1) Launch of the Space Shuttle Discovery; 2) Weather; 3) Load over of onboard reactants; 4) Hold time for liquid hydrogen; 5) Stowage of Mid-deck completion; 6) Check-out of onboard and ground network systems; 7) Launch windows; 8) Mission duration; 9) Extravehicular (EVA) plans; 10) Space Shuttle landing day; and 11) Scrub turn-around plans. Hahn presents and discusses a short video of the STS-121 payload flow. Kathy Winters gives her weather forecast for launch. She then presents a slide presentation on the following weather conditions for the Space Shuttle Discovery: 1) STS-121 Tanking Forecast; 2) Launch Forecast; 3) SRB Recovery; 4) CONUS Launch; 5) TAL Launch; 6) 24 Hour Delay; 7) CONUS 24 Hour; 8) TAL 24 Hour; 9) 48 Hour Launch; 10) CONUS 48 Hour; and 11) TAL 48 Hour. The briefing ends with a question and answer period from the media.

CASI

*Countdown; Discovery (Orbiter); Space Transportation System; Spacecraft Launching*

**20060027254** NASA Kennedy Space Center, Cocoa Beach, FL, USA

**NASA Agency Overview Briefing**

June 30, 2006; In English; 1 hr., 11 min., 9 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V04, Videotape-VHS: B04, Videotape-Beta

The briefing opened with Dean Acosta (NASA Press Secretary) introducing Michael Griffin (NASA Administrator) and Bill Gerstenmaier (Associate Administrator for Space Operations). Bill Griffin stated that they would resume the Shuttle Fight to Return process, that the vehicle was remarkably clean and if the weather was good, the Shuttle would be ready to launch as scheduled. Bill Gerstenmaier stated that the preparations and processing of the vehicle went extremely well and they are looking forward to increasing the crew size to three. Then the floor was open to questions from the press.

CASI

*Space Shuttles; Launch Vehicles; Launching; Crew Size; Space Transportation System*

**20060027256** NASA Kennedy Space Center, Cocoa Beach, FL, USA

**STS-121: Discovery Mission Management Team Briefing**

July 03, 2006; In English; 48 min., 41 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V03, Videotape-VHS: B03, Videotape-Beta

The briefing opened with Bruce Buckingham (NASA Public Affairs) introducing John Shannon (Chairman, Mission Management Team, JSC), John Chapman (External Tank Project Manager), Mike Leinbach (Shuttle Launch Director), and 1st Lt. Kaleb Nordgren (USAF 45th Weather Squadron). John Shannon reported that the team for hydrogen loading was proceeding well and the external tank detanking was completed. During detanking the inspection team cracked foam caused by condensation and ice formation as the tank expanded and contracted. Aerothermal analysis and analysis fro ice formation will be completed before launch. John Chapman explained the mechanics of the external tank design, the foam cracking, bracket design, etc. Mike Leinbach discussed the inspection teams and their inspection final inspection for ice formation before and after external tank filling. The inspection team of eight very experienced personnel also use telescopes with cameras to find any problems before launch. Kaleb Nordgren discussed weather and said there was a 40% chance of weather prohibiting launch. The floor was the opened for questions from the press.

CASI

*Space Shuttle Missions; Spacecraft Launching; Thermal Analysis; Ice Formation; Foams; External Tanks*

**20060027368** NASA Kennedy Space Center, Cocoa Beach, FL, USA

**STS-121: Discovery Spacewalk Overview Briefing**

June 08, 2006; In English; 51 min., 57 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V03, Videotape-VHS: B03, Videotape-Beta

The briefing began with the introduction of Tomas Gonzalez-Torres (Lead Extra Vehicular Activity Officer). The spacewalk team included Pierce Sellers (EV-1), Mike Fossum (EV-2) and Mark Kelly (coordinator and pilot). Three new

EMU’s (space suits) were provided with hardware upgrades (warning systems). The 1st EVA would take place on flight day 5 and would include the exchange of the 3 EMU’s. The 1st task was the installation of the blade locker, a device used to prevent severing of cables. The team will also install the Interface Umbilical System (IUS) which is an extension cord for the mobile transporter. EVA-2 task will be to replace the old Trailing Umbilical System (TUS) with a new one.
CASI
*Extravehicular Activity; Space Suits; Space Transportation System; Installing*

**20060027369** NASA Kennedy Space Center, Cocoa Beach, FL, USA
**STS-121: Discovery Pre-Launch Mission Management Team Press Briefing**
July 03, 2006; In English; 27 min., 54 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V02, Videotape-VHS: B02, Videotape-Beta

The briefing began with Allard Beutel (NASA Public Affairs) introducing Bill Gerstenmaier (Associate Administrator for Space Operations) who provided an update of the Mission Management team meeting. The 3 criteria reviewed by the team were: a) ascent heating; b) ice formation and c) remaining foam still intact. The ascent heating had a safety factor of 5 and posed no concern. Ice formation was not a concern. In order to insure there was no damage to the remaining foam, an 8ft. pipe with a camera attached was used to provide pictures. The boroscope pictures showed there was no damage to the brackets or foam. The inspection went very well and the foam was acceptable and ready to fly. Then the floor was open to questions from the press.
CASI
*Aerodynamic Heating; Space Transportation System; Safety Factors; Ice Formation; Inspection; Foams; Damage; Atmospheric Entry*

**20060027370** NASA Kennedy Space Center, Cocoa Beach, FL, USA
**STS-121: Discovery Post Launch Press Briefing**
July 04, 2006; In English; 36 min., 43 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V03, Videotape-VHS: B03, Videotape-Beta

The briefing begins with Dean Acousta (NASA Press Secretary) introducing Michael Griffin (NASA Administrator), Bill Gerstenmaier (Associate Administrator for Space Operations) Wayne Hale (Space Shuttle Program Manager), John Shannon (Chairman, Mission Management Team, JSC), and Mike Leinbach (NASA Launch Director). The teams effort and dedication paid off in the form of a perfect launch and the weather cooperated. The Mission Management Team no problems during inspection. Debris assessment at 2 min. 47 sec. and 4 min. 50 sec. will be discussed when that information becomes available.The floor was then open for questions from the press.
CASI
*Space Transportation System; Space Shuttles; Launching; Inspection; Debris*

**20060027371** NASA Kennedy Space Center, Cocoa Beach, FL, USA
**STS-121: Discovery Entry Flight Director Post Landing Press Conference**
July 17, 2006; In English; 33 min., 10 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V03, Videotape-VHS: B03, Videotape-Beta

Steve Stitch, STS-121 Entry Flight Director, and Wayne Hale, Space Shuttle Program is shown in this post landing press conference. Steve Stitch begins with discussing the following topics: 1) Weather at Kennedy Space Center; 2) Gap filler protrusion; 3) De-orbit burn; 4) Space Shuttle Landing; 5) Global Position Satellite System (GPSS) performance; and 6) Post-landing rain showers. Wayne Hale discusses external tank observations at launch and the goals that were obtained by this flight, which are to deliver 4000 pounds of scientific equipment, increase the crew members to three on the International Space Station (ISS), and repair the ISS. Questions from the press on lessons learned from the Auxiliary Power Unit (APU) leak, and flight readiness reviews are addressed.
CASI
*International Space Station; Space Transportation System; Spacecraft Landing; Discovery (Orbiter)*

**20060027799** NASA Kennedy Space Center, Cocoa Beach, FL, USA
**STS-121: Discovery L-2 Countdown Status Briefing**
June 29, 2006; In English; 23 min., 57 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V02, Videotape-VHS: B02, Videotape-Beta

Bruce Buckingham from NASA Public Affairs introduces Pete Nicolenko, NASA Test Director, and Kathy Winters, Shuttle Weather Officer. During this STS-121 two days before launch countdown briefing, Pete Nicolenko says that there are no issues of concern and that they are on schedule for launch. He then presents and discusses an Orbiter Processing Facility (OPF) video. The OPF topics of discussion include: 1) Wheel and tire installation; 2) Gap filler installation; 3) Booster build-up; 4) Transport of External Tank (ET) 119; 5) ET to Shuttle Rocket Booster (SRB) Mate operation; 6) Roll-over of Discovery out of OPF to the Vehicle Assembly Building (VAB); and 7) Roll-out to the pad. Kathy Winters gives her weather forecast for the STS-121 launch. The video ends with a question and answer period from the media.
CASI
*Countdown; Discovery (Orbiter); Space Transportation System; NASA Space Programs*

**20060027904** NASA Kennedy Space Center, Cocoa Beach, FL, USA
**STS-121: Discovery Mission Overview Briefing**
June 08, 2006; In English; 1 hr., 7 min., 29 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V04, Videotape-VHS: B04, Videotape-Beta

Tony Ceccacci, Lead STS-121 Space Shuttle Flight director, and Rick LaBrode, Lead STS-121 ULF 1.1 International Space Station Flight Director, are shown in this STS-121 Discovery mission overview. Ceccacci begins with an overview of the mission and gives the mission goals. He also presents various slides of the STS-121 payload that includes: 1) Orbiter Docking System; 2) Integrated Cargo Carrier (ICC); 3) Multipurpose Logistics Module (MPLM); 4) TPS Sample Box Assembly; 5) Shuttle Remote Manipulator System (SRMS); and 6) Orbiter Boom Sensor System (OBSS). He shows a video presentation on the various processes involved in the inspections of the Orbiter that include: 1) Unberthing OBSS; 2) Starboard wing leading edge survey; 3) Wing leading edge passes; 4) Nose cap surveys; 5) Port side surveys; and 6) Docking with the International Space Station. Ceccacci ends his presentation with discussing the work performed from flight day 1 to flight day 14. Rick LaBrode begins with discussing the on-orbit status of the Expedition 13 crew. He then presents a video of the MPLM installation, forward hatch of MPLM, resupply stowage platform, resupply stowage racks, and Oxygen Generator System (OGS) rack. Questions are answered from the media.
CASI
*Space Shuttle Missions; General Overviews; NASA Space Programs; Space Shuttle Payloads*

**20060027905** NASA Kennedy Space Center, Cocoa Beach, FL, USA
**STS-121: Discovery Space Shuttle Safety Improvements Briefing**
June 08, 2006; In English; 1 hr., 26 min., 1 sec. playing time, in color, with sound; No Copyright; Avail: CASI: V04, Videotape-VHS: B04, Videotape-Beta

Steve Poulos, Space Shuttle Orbiter Projects Office Manager, and John Chapman, Space Shuttle External Tank Project Manager is shown in this STS-121 Space Shuttle Discovery safety improvements briefing. A graphic presentation of the gap filler installation is shown. The graphics include: 1) Protruding gap fillers during STS-114 mission; 2) STS-114 gap fillers removed on orbiter; 3) Gap filler installation prior to STS-114; 4) Post-STS-114 installation techniques; 5) Gap filler installation post STS-114; 6) Gap filler priority areas; 7) Discovery gap filler installation table and status for STS-121; 8) Damaged blanket on STS-114; 9) On-orbit photography and post-landing photography on STS-114; and 10) STS-114 insulation tiles. Poulos presents imagery that was obtained on STS-114. The imagery includes: 1) The Enhanced Launch Vehicle Imaging System (ELVIS); 2) Liquid oxygen external tank view; 3) Hand-held imagery of the external tank falling into the ocean; 4) ELVIS on STS-121, short, medium and long range camera configurations; 5) Radar capability on the ground at Kennedy Space Center, and 6) STS-121 aft external tank door tiles. Poulos says that STS-121 will have even more imagery than STS-114. John Chapman presents video animation of the external tank where modifications were made along with the ice frost ramps with extensions. Chapman explains these areas using an external tank model. Questions are then answered from the media.
CASI
*Flight Safety; Space Shuttle Missions; NASA Space Programs; Discovery (Orbiter); Spacecraft Maintenance*

**20070031008** NASA Langley Research Center, Hampton, VA USA

**EVA Assembly of Large Space Structure Neutral Buoyancy, Zero-Gravity Simulation: NASA-LaRC Nestable Columns and Joints**

April 1979; In English; See also 19810017623; See also NASA-TP-1872; Originally recorded in 16mm, Silent, Color, 21.5min.; DVD produced from the original 16mm recording

Report No(s): L-1275; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)

ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The film depicts an extravehicular activity (EVA) that involved the assembly of six ‘space-weight’ columns into a regular tetrahedral cell by a team of two ‘space’-suited test subjects. This cell represents the fundamental ‘element’ of a tetrahedral truss structure. The tests were conducted under simulated zero-gravity conditions, achieved by neutral buoyancy in water. The cell was assembled on an ‘outrigger’ assembly aid off the side of a mockup of the Shuttle Orbiter cargo bay. Both manual and simulated remote manipulator system (RMS) modes were evaluated. The simulated RMS was used only to transfer stowed hardware from the cargo bay to the work sites. Articulation limits of the pressure suit and zero gravity could be accommodated by work stations with foot restraints. The results of this study have confirmed that astronaut EVA assembly of large, erectable space structur is well within man’s capabilities.

Author (revised)

*Extravehicular Activity; Large Space Structures; Trusses; Neutral Buoyancy Simulation; Space Shuttle Orbiters; Space Suits; Astronaut Performance; Space Erectable Structures*

## 17
## SPACE COMMUNICATIONS, SPACECRAFT COMMUNICATIONS, COMMAND AND TRACKING

Includes space systems telemetry; space communications networks; astronavigation and guidance; and spacecraft radio blackout. For related information see also *04 Aircraft Communications and Navigation*; and *32 Communications and Radar*.

**20040040094** NASA Goddard Space Flight Center, Greenbelt, MD, USA

**TDRS-1 Going Strong at 20**

April 03, 2003; In English; 10 mins., 19 sec. playing time, in color, with sound

Report No(s): G03-029; No Copyright; Avail: CASI: V01, Videotape-VHS: B01, Videotape-Beta

This video presents an overview of the first Tracking and Data Relay Satellite (TDRS-1) in the form of text, computer animations, footage, and an interview with its program manager. Launched by the Space Shuttle Challenger in 1983, TDRS-1 was the first of a network of satellites used for relaying data to and from scientific spacecraft. Most of this short video is silent, and consists of footage and animation of the deployment of TDRS-1, written and animated explanations of what TDRS satellites do, and samples of the astronomical and Earth science data they transmit. The program manager explains in the final segment of the video the improvement TDRS satellites brought to communication with manned space missions, including alleviation of blackout during reentry, and also the role TDRS-1 played in providing telemedicine for a breast cancer patient in Antarctica.

CASI

*TDR Satellites; Satellite Transmission; Deployment; Satellite Networks; Spacecraft Communication*

**20070031014** National Advisory Committee for Aeronautics. Langley Aeronautical Lab., Langley Field, VA USA, Boeing Co., USA

**The Lunar Orbiter: A Spacecraft to Advance Lunar Exploration**

[1966]; In English; Originally recorded in 16mm, Sound, Color, 300ft., 7.5min.; DVD produced from the original 16mm recording

Report No(s): L-1312; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)

ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The film describes the Lunar Orbiter’s mission to photograph landing areas on the Moon. The Orbiter will be launched from Cape Kennedy using an Atlas Agena booster rocket. Once it is boosted in a trajectory toward the Moon, the Orbiter will deploy two-way earth communication antennas and solar panels for electricity. Attitude control jets will position the solar panels toward the sun and a tracker for a fix on its navigational star. The Orbiter will be put in an off-center orbit around the Moon where it will circle from four to six days. Scientists on Earth will study the effects of the Moon’s gravitational field on the spacecraft, then the orbit will be lowered to 28 miles above the Moon’s surface. Engineers will control the Orbiter

manually or by computer to activate two camera lenses. The cameras will capture pictures of 12,000 square miles of lunar surface in 25 and 400 square mile increments. Pictures will be sent back to Earth using solar power to transmit electrical signals. The signals will be received by antennas at Goldstone, CA, and in Australia and Spain. Incoming photographic data will be electronically converted and processed to produce large-scale photographic images. The mission will be directed from the Space Flight Operations Facility in Pasadena, CA by NASA and Boeing engineers. After the photographic mission, the Orbiter will continue to circle the Moon providing information about micrometeoroids and radiation in the vicinity.
Derived from text
*Lunar Orbiter; Lunar Photography; Lunar Surface; Lunar Exploration; Flight Operations; Moon*

## 18
## SPACECRAFT DESIGN, TESTING AND PERFORMANCE

Includes satellites; space platforms; space stations; spacecraft systems and components such as thermal and environmental controls; and spacecraft control and stability characteristics. For life support systems see *54 Man/System Technology and Life Support*. For related information see also *05 Aircraft Design, Testing and Performance; 39 Structural Mechanics*; and *16 Space Transportation and Safety*.

**19940010754** NASA Marshall Space Flight Center, Huntsville, AL, USA
**Long Duration Exposure Facility is coming home**
Nov 1, 1989; In English
Report No(s): MSFC-16005; NASA-TM-109656; NONP-NASA-VT-93-190454; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video tape describes how the Long Duration Exposure Facility will provide knowledge of the effects of space on various materials over a long period of time.
CASI
*Long Duration Exposure Facility; Spaceborne Experiments*

**19940010794** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**Orbiting solar operations**
Jul 1, 1988; In English
Report No(s): GSFC-R-20; NASA-TM-109583; NONP-NASA-VT-93-190381; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

A short video presentation about the capabilities, accomplishments, and limitations of the Orbiting Solar Operations is presented.
CASI
*Solar Activity; Solar Observatories*

**19940010796** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**TDRS video clip**
Jan 1, 1989; In English
Report No(s): GSFC-S-09; NASA-TM-109585; NONP-NASA-VT-93-190383; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video presents Tracking and Data Relay Satellite and Goddard Space Flight Center involvement.
CASI
*Satellite Communication; TDR Satellites*

**19940010801** NASA Marshall Space Flight Center, Huntsville, AL, USA
**Space Station: The link to America's future**
Feb 1, 1989; In English
Report No(s): MSFC-14261; NASA-TM-109653; NONP-NASA-VT-93-190451; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video tape documents the planned design and development of the Space Station.

CASI

*NASA Space Programs; Space Station Freedom*

**19940010805** NASA Marshall Space Flight Center, Huntsville, AL, USA
**Inertial Upper Stage**
Feb 1, 1989; In English
Report No(s): MSFC-14308; NASA-TM-109654; NONP-NASA-VT-93-190452; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video tape details the importance of the Inertial Upper Stage in projecting various satellites from the Shuttle's cargo bay.

CASI

*Inertial Upper Stage; Orbit Insertion; Payload Delivery (STS)*

**19940014492** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**TDRS press release**
Oct 1, 1988; In English
Report No(s): GSFC-R-37; NASA-TM-109373; NONP-NASA-VT-94-198220; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This material is released to both local and national broadcast media showing the Tracking and Data Relay Satellite (TDRS). The tape has split audio to facilitate ease of customizing for individual broadcast formats.

CASI

*Functional Design Specifications; TDR Satellites*

**19940029053** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**Cosmic Background Radiation Explorer (COBE)**
Oct 1, 1989; In English
Report No(s): GSFC-T-23; NASA-TM-109801; NONP-NASA-VT-94-12929; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video explains the mission of the Cosmic Background Radiation Explorer (COBE) prior to its November 1989 launch. It also includes animated footage on the Big Bang theory.

CASI

*Background Radiation; Big Bang Cosmology; Cosmic Background Explorer Satellite; Spaceborne Astronomy*

**20000064717** NASA Marshall Space Flight Center, Huntsville, AL USA
**Starfire I/ Consort III Launch**
May 16, 1990; In English; Videotape: 28 min. 11 sec. playing time, in color. with sound
Report No(s): NONP-NASA-VT-2000081529; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS

The Consort 3 is a commercial suborbital rocket that carried 12 microgravity experiments. It was launched on a Starfire rocket on May 16, 1990, from the Naval Ordnance Missile Test Station facilities at the U.S. Army's White Sands Missile Range (WSMR), NM. The videotape opens with approximately 2 minutes of a man speaking into a microphone but there is no sound. This is followed by a brief summary of the payload, and the expected trajectory, a view of the launch vehicle, the countdown and the launch. The videotape then shows a film clip from the University of Alabama, with Dr. Francis Wessling, project manager for the Consort 3 project, speaking about the mission goals in the materials sciences experimentation. The video shows footage of the payload being assembled. The next section is a discussion by Dr. Roy Hammustedt, of Pennsylvania State University, who reviews the Penn State Bio Module,and the goal of learning about the effects of gravity on physiology. This is followed by George Maybee, from McDonald Douglas, who spoke about the payload integration

process while the video shows some of the construction. The last section of the videotape shows a press conference at the launch site. Ana Villamil answers questions from the press about the flight.
CASI
*Launching; Microgravity; Payloads; Low Gravity Manufacturing; Gravitational Physiology; Physiological Effects*

**20010116514** NASA Johnson Space Center, Houston, TX USA
**Apollo Presentation**
Jan. 01, 2001; In English; Videotape: 7 min. 2 sec. playing time, in color, with sound
Report No(s): NONP-NASA-VT-2001174288; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video is a compilation of scenes from the Apollo 11 mission, from the speech President Kennedy gave declaring America's intention to go to the Moon through the Lunar Module liftoff from the Moon's surface, including footage from the Apollo 11 spacecraft launch, astronaut activities on the lunar surface, the placing of the American flag on the surface on the Moon, and an astronaut on the Lunar Rover.
CASI
*Astronauts; Lunar Surface; Moon; Apollo 11 Flight*

**20070030945** NASA Langley Research Center, Hampton, VA USA
**Landing Energy Dissipation for Manned Reentry Vehicles**
Fisher, Loyd. L.; June 07, 1960; In English; See also 19980228267; See also NASA-TN-D-453; Originally recorded in 16mm, Silent, Color, 128ft., 3.5min.; DVD produced from the original 16mm recording
Report No(s): L-540; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The film shows experimental investigations to determine the landing-energy-dissipation characteristics for several types of landing gear for manned reentry vehicles. The landing vehicles are considered in two categories: those having essentially vertical-descent paths, the parachute-supported vehicles, and those having essentially horizontal paths, the lifting vehicles. The energy-dissipation devices include crushable materials such as foamed plastics and honeycomb for internal application in couch-support systems, yielding metal elements as part of the structure of capsules or as alternates for oleos in landing-gear struts, inflatable bags, braking rockets, and shaped surfaces for water impact.
Author (revised)
*Reentry Vehicles; Spacecraft Landing; Manned Reentry; Space Capsules*

**20070030950** National Advisory Committee for Aeronautics. Langley Aeronautical Lab., Langley Field, VA USA
**Water Landing Characteristics of a 1/6-Scale Model Reentry Capsule with an 80-Inch Heat Shield**
September 11, 1959; In English; Originally recorded in 16mm, Silent, Color, 150ft., 4min.; DVD produced from the original 16mm recording
Report No(s): L-487; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Variables for the reentry capsule water landing tests were flight path, vertical contact velocity, and contact attitude. The capsule weighed 1900 pounds with a center of gravity 16.8 inches above maximum diameter.
Derived from text
*Water Landing; Spacecraft Reentry; Heat Shielding*

**20070030951** NASA Langley Research Center, Hampton, VA USA
**Dynamic Model Tests of Models of the McDonnell Design of Project Mercury Capsule in the Langley 20-Foot Free-Spinning Tunnel**
June 10, 1961; In English; 16mm, Silent, Black & White, 800ft., 22min.; DVD produced from the original 16mm recording
Report No(s): L-463; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

On 10 June 1961, 33 tests of the aerodynamic response of the McDonnell model Mercury capsule were conducted. Variables included spin, different parachute tethers, and the addition of baffles.
Derived from text
*Dynamic Models; Mercury Spacecraft; Wind Tunnel Tests; Dynamic Response*

**20070030952** National Advisory Committee for Aeronautics. Langley Aeronautical Lab., Langley Field, VA USA
**Dynamic Model Tests of Models in the McDonnell Design of Project Mercury Capsule in the Langley 20-Foot Free-Spinning Tunnel**
May 11, 1959; In English; Originally recorded in 16mm, Silent, Black & White, 830ft., 23min.; DVD produced from the original 16mm recording
Report No(s): L-458; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

On 11 May 1959, 24 tests of the aerodynamic response of the McDonnell model Project Mercury capsule were conducted. The initial test demonstrated free-fall; a parachute was used in the remaining test. Several tests included the addition of baffles.
Derived from text
*Dynamic Models; Mercury Spacecraft; Wind Tunnel Tests*

**20070030955** NASA Langley Research Center, Hampton, VA USA
**Water Landing Characteristics of a Reentry Capsule**
December 23, 1958; In English; See also 19980228040; See also NASA-MEMO-5-23-59L; Originally recorded in 16mm, Silent, Color, 110ft., 3min.; DVD produced from the original 16mm recording
Report No(s): L-415; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Experimental and theoretical investigations have been made to determine the water-landing characteristics of a conical-shaped reentry capsule having a segment of a sphere as the bottom. For the experimental portion of the investigation, a 1/12-scale model capsule and a full-scale capsule were tested for nominal flight paths of 65 deg and 90 deg (vertical), a range of contact attitudes from -30 deg to 30 deg, and a full-scale vertical velocity of 30 feet per second at contact. Accelerations were measured by accelerometers installed at the centers of gravity of the model and full-scale capsules. For the model test the accelerations were measured along the X-axis (roll) and Z-axis (yaw) and for the full-scale test they were measured along the X-axis (roll), Y-axis (pitch), and Z-axis (yaw). Motions and displacements of the capsules that occurred after contact were determined from high-speed motion pictures. The theoretical investigation was conducted to determine the accelerations that might occur along the X-axis when the capsule contacted the water from a 90 deg flight path at a 0 deg attitude. Assuming a rigid body, computations were made from equations obtained by utilizing the principle of the conservation of momentum. The agreement among data obtained from the model test, the full-scale test, and the theory was very good. The accelerations along the X-axis, for a vertical flight path and 0 deg attitude, were in the order of 40g. For a 65 deg flight path and 0 deg attitude, the accelerations along the X-axis were in the order of 50g. Changes in contact attitude, in either the positive or negative direction from 0 deg attitude, considerably reduced the magnitude of the accelerations measured along the X-axis. Accelerations measured along the Y- and Z-axes were relatively small at all test conditions.
Author
*Water Landing; Conical Bodies; Reentry Vehicles; Full Scale Tests; Spacecraft Landing; Space Capsules*

**20070030957** National Advisory Committee for Aeronautics. Langley Aeronautical Lab., Langley Field, VA USA
**Reentry Body Stability Tests Conducted in Langley Spin Tunnel**
June 09, 1958; In English; Originally recorded in 16mm, Silent, Black & White, 40ft., 1min.; DVD produced from the original 16mm recording
Report No(s): L-346; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Reentry body stability tests were conducted in an initial configuration, with a small drogue chute, with an extendable flare, and in an alternate configuration with a covered flare.
Derived from text
*Reentry Vehicles; Wind Tunnel Tests; Wind Tunnel Stability Tests; Spacecraft Stability*

**20070030961** National Advisory Committee for Aeronautics. Langley Aeronautical Lab., Langley Field, VA USA
**Saturn: A Giant Thrust into Space**
January 1962; In English; Originally recorded in 16mm, Color, Sound, 369ft., 10 min
Report No(s): L-724; HQ-36; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The film provides an introduction and overview of the Saturn launch vehicle. It is designed with stages to drop off as fuel is spent. There may be two, three, or four stages, depending on the payload. The Saturn rocket will be used to send Apollo missions to the Moon and back. Guidance systems and booster engine rockets are based on proven mechanisms. Scale models are used to test the engines. Hardware, airframes, guidance systems, instrumentation, and the rockets are produced at sites throughout the country. The engines go to Marshall Space Flight Center for further tests. After partial assembly, the vehicle is shipped to Cape Canaveral in large pieces where it is assembled using specially built equipment and structures. Further trials are performed to assure successful launches.
CASI
*Saturn Launch Vehicles; Saturn Project*

**20070030964** NASA Langley Research Center, Hampton, VA USA
**Blast Effects of Twin Variable-Cant Rocket Nozzles on Visibility During Landing on a Particle-Covered Surface**
Hurt, G. J.; Lina, L. J.; September 08, 1964; In English; See also 19650002904; See also NASA-TN-D-2455; Originally recorded in 16mm, Silent, Black and White, 530ft., 14.5min.; DVD produced from the original 16mm recording
Report No(s): L-689; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

A limited investigation has been conducted to determine the jet-blast effect of twin variable-cant supersonic nozzles. These tests were made to examine the result of using canted main rocket engines to sweep the blast debris outward from the proposed landing area of a rocket-powered vehicle making a vertical approach to a touchdown. Cant angles from 0 degrees to 75 degrees, at intervals of 15 degrees, were tested at low ambient pressure and at atmospheric ambient pressure. Nozzle chamber pressures used were 400 psi and 2000 psi.
Derived from text
*Jet Blast Effects; Rocket Nozzles; Slopes; Visibility; Supersonic Nozzles; Vertical Landing*

**20070030966** NASA Langley Research Center, Hampton, VA USA
**An Exploratory Investigation of Jet Blast Effects on a Dust Covered Surface at Low Ambient Pressure**
Spady, Jr. A. A.; December 08, 1961; In English; See also 19620000062; See also NASA-TN-D-1017; Originally recorded in 16mm, Silent, Black & White, 702ft., 19min.; DVD produced from the original 16mm recording
Report No(s): L-671; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

A preliminary investigation has been conducted to determine the effects of jet blast, at low ambient pressures, on a surface covered with loose particles. Tests were conducted on configurations having from one to four nozzles at 0, 10, 20, and 30 degree cant angles and heights of 2 and 4 inches above the particle-covered surface.
Author (revised)
*Jet Nozzles; Jet Blast Effects; Rocket Launching; Dust; Spacecraft Landing*

**20070030968** NASA Langley Research Center, Hampton, VA USA
**Effect of Load-Alleviating Structure on the Landing Behavior of a Reentry-Capsule Model**
Hoffman, E. L.; McGhee, J. R.; Stubbs, S. M.; March 13, 1961; In English; See also 20040008118; See also NASA-TN-D-811; Originally recorded in 16mm., Silent, Color, 77ft., 2min.; DVD produced from the original 16mm recording
Report No(s): L-606; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Model tests have been made to determine the landing-impact characteristics of a parachute-supported reentry capsule that had a compliable metal structure as a load-alleviating device. A 1/6-scale dynamic model having compliable aluminum-alloy legs designed to give a low onset rate of acceleration on impact was tested at flight-path angles of 90 degrees (vertical) and 35 degrees, at a vertical velocity of 30 ft/sec (full scale), and at contact attitudes of 0 degrees and +/-30 degrees. Landings were made on concrete, sand, and water.
Author (revised)
*Landing Loads; Impact Loads; Spacecraft Landing; Space Capsules; Aluminum Alloys*

**20070030969** NASA Langley Research Center, Hampton, VA USA

**Landing of Manned Reentry Vehicles**

February 1961; In English; Originally recorded in 16mm, Silent, Color, 130ft., 4min.; DVD produced from the original 16mm recording

Report No(s): L-600; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)

ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Landing characteristics were investigated using dynamic models. The landing speeds for several let-down systems are simulated. Demonstrations include: (1) the vertical landing of parachute-supported capsules on water; (2) reduction of landing acceleration by shaping the impact surface for water entry; (3) problems created by horizontal velocity due to wind; (4) the use of energy absorbers (yielding metal legs or torus bags) for land or water landings; (5) problems associated with horizontal land landings; (6) the use of a paraglider to aid in vehicle direction control; (7) a curved undersurface to serve as a skid-rocker to convert sinking-speed energy into angular energy; (8) horizontal-type landing obtained with winged vehicles on a hard runway; (9) the dangers of high-speed water landings; and (10) the positive effects of parachute support for landing winged vehicles.

Derived from text

*Aerodynamic Characteristics; Dynamic Models; Manned Spacecraft; Water Landing; Vertical Landing; Spacecraft Landing*

**20070030971** NASA Langley Research Center, Hampton, VA USA

**1/9-Scale Saturn Model**

December 23, 1960; In English; Originally recorded in 16mm, Silent, Color, 140ft., 4min.; DVD produced from the original 16mm recording

Report No(s): L-592; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)

ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The film shows technicians assembling the nose cone on a Saturn model rocket in a test facility. The booster configuration is show. After the nose cone is in place, a meter is attached at the joint and vibration tests are conducted.

CASI

*Nose Cones; Spacecraft Models; Scale Models; Saturn Launch Vehicles*

**20070030974** NASA Langley Research Center, Hampton, VA USA

**Preliminary Landing Tests of a 1/6-Scale Dynamic Model of a Lunar Excursion Vehicle**

July 02, 1962; In English; Originally recorded in 16mm, Silent, Black & White, 240ft., 6.5min.; DVD produced from the original 16mm recording

Report No(s): L-733; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)

ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The film shows 21 trials made on 8 days of the scale Model 413 lunar landing vehicle. Attitudes tested were a pitch of 0, -15, or 15 degrees and yaw of 0 or 45 degrees. Velocities were vertical 10 and horizontal 10, though two trials were simple vertical drops.

Derived from text

*Lunar Landing; Landing Simulation; Lunar Landing Modules; Dynamic Models*

**20070030975** NASA Langley Research Center, Hampton, VA USA

**Landing Characteristics of the Apollo Spacecraft with Deployed Heat Shield Impact Attenuation Systems**

Stubbs, Sandy M.; October 11, 1965; In English; See also 19660005612; See also NASA-TN-D-3059; Originally recorded in 16mm, Silent, Color, 580ft., 16min.; DVD produced from the original 16mm recording

Report No(s): L-886; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)

ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

An experimental investigation was made to determine the landing characteristics of a 1/4-scale dynamic model of the Apollo spacecraft command module using two different active (heat shield deployed prior to landing) landing systems for impact attenuation. One landing system (configuration 1) consisted of six hydraulic struts and eight crushable honeycomb struts. The other landing system (configuration 2), consisted of four hydraulic struts and six strain straps. Tests made on water and the hard clay-gravel composite landing surfaces simulated parachute letdown (vertical) velocities of 23 ft/sec (7.0 m/s) (full scale). Landings made on the sand landing surface simulated vertical velocities of 30 ft/sec (9.1 m/s). Horizontal

velocities of from 0 to 50 ft/sec (15 m/s) were simulated. Landing attitudes ranged from -30'degrees to 20 degrees, and the roll attitudes were O degrees, 90 degrees, and 180 degrees. For configuration 1, maximum normal accelerations at the vehicle center of gravity for landings on water, sand, and the hard clay-gravel composite surface were 9g, 20g, and 18g, respectively. The maximum normal center-of-gravity acceleration for configuration 2 which was landed only on the hard clay-gravel landing surface was approximately 19g. Accelerations for configuration 2 were generally equal to or lower than accelerations for configuration 1 and normal.
Author
*Aerodynamic Characteristics; Apollo Spacecraft; Command Modules; Heat Shielding; Impact Tests; Impact Acceleration*

**20070030977** NASA Langley Research Center, Hampton, VA USA
**Model Investigation of Technique for Full Scale Landing Impact Tests at Simulated Lunar Gravity**
Blanchard, Ulysse J.; January 11, 1965; In English; See also 19650008606; See also NASA-TN-D-2586; Originally recorded in 16mm, Silent, Color, 147ft., 4min.; DVD produced from the original 16mm recording
Report No(s): L-856; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

An investigation of a 1/6-scale dynamic model has been made to develop and evaluate a technique for conducting full-scale landing-impact tests at simulated lunar gravity. Landings were made at touchdown pitch attitudes of -15 degrees, 0 degrees, and 15 degrees. All landings were made with two gear pads forward and at a roll attitude of 0 degrees. Both roll and yaw attitudes were constrained. Vertical landing speed was varied from 5 to 15 feet per second (1.5 to 4.6 m/s) and horizontal speed was varied from 0 to 10 feet per second (0 to 3.0 m/s). Most of the landings were made at a vertical and horizontal speed of 10 feet per second or 3.0 m/s (45 degree flight-path angle) while pitch attitude and surface characteristics, friction and topography, were varied. These parameters were investigated with the free-body earth-gravity and the simulated lunar-gravity test techniques. The landings were made at a model mass corresponding to a full-scale lunar weight (force due to gravity) of 1,440 pounds (6.41 kN) or an earth weight of 8,640 pounds (38.4 kN).
Derived from text
*Angular Acceleration; Landing Simulation; Spacecraft Models; Touchdown; Lunar Landing; Dynamic Models*

**20070030978** NASA Langley Research Center, Hampton, VA USA
**Dynamic Model Investigation of the Landing Characteristics of a Manned Spacecraft**
Thompson, William C.; December 1964; In English; See also 19650007935; See also NASA-TN-D-2497; Originally recorded in 16mm, Silent, Color, 215ft., 6min.; DVD produced from the original 16mm recording
Report No(s): L-848; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Investigations were made to study the water-landing and certain grounds-surface landing characteristics of a Gemini spacecraft model. The water landing experiments were made by simulating paraglider and parachute letdowns with two 1/6-scale model configurations. Parameters included various combinations of attitude, horizontal speed, vertical speed, and landing skids extended and retracted. Investigations were made in calm water and in waves. The paraglider landings at horizontal speeds of 63 feet per second (19.8 m/sec) which resulted in a noseover or tumbling shortly after initial water contact. The maximum longitudinal acceleration of the model in calm water was about 14g units, and the maximum angular acceleration was 66 radians per second squared. In the parachute landings with the heat shield forward, the model skidded along the water surface on the heat shield. Parachute landings with the small end forward resulted in behavior similar to that of the paraglider landings. The ground-surface landings were made with a 1/3-scale model by simulating a parachute letdown with braking rockets, which were fired prior to touchdown to dissipate vertical velocity. In these landings, control of timing and aligning the rockets on the model was very critical, and violent behavior resulted when either rocket alignment or timing was in error. In the landings that were correctly controlled, the model either remained upright or slowly rolled over on its side.
Author (revised)
*Dynamic Models; Gemini Spacecraft; Spacecraft Models; Touchdown; Landing Simulation; Manned Spacecraft; Spacecraft Landing*

**20070030979** NASA Langley Research Center, Hampton, VA USA
**Model Test of Mars Entry Vehicles in Langley Spin Tunnel**
October 08, 1964; In English; Originally recorded in 16mm, Silent, Black & White, 120ft., 3.5min; DVD produced from the original 16mm recording
Report No(s): L-844; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Four models of Mars entry vehicles tested were a sphere with cg=35 percent (measured in percent of diameter from surface); Apollo with cg=16 percent (measured in percent of maximum diameter rearward of heat shield); a 103-degree cone with cg=20 percent (measured in percent of maximum diameter rearward of small end); and a tension structure: cg=25 percent (measured in percent of maximum diameter rearward of small end).
Derived from text
*Mars Landing; Spacecraft Reentry; Spin Tests; Wind Tunnel Tests*

**20070030980** NASA Langley Research Center, Hampton, VA USA
**Performance Characteristics of a Preformed Elliptical Parachute at Altitudes between 200,000 and 100,000 Thousand Feet Obtained by In-Flight Photography**
Murro, Harold N.; Whitlock, Charles, H.; October 31, 1963; In English; See also 19640005308; See also NASA-TN-D-2183; Originally recorded in 16mm, Silent, Color, 3820ft., 35.5min.; DVD produced from the original 16mm recording
Report No(s): L-816; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The performance characteristics of a pre-formed elliptical parachute at altitudes between 200,000 and 100,000 feet were obtained by means of in-flight photography. The tests demonstrate that this type of parachute will open at altitudes of about 200,000 feet if conditions such as twisting of the suspension lines or draping of the suspension lines over the canopy do not occur. Drag-coefficient values between 0.6 and 0.8 were found to be reasonable for this type of parachute system in the altitude range between 200,000 and 100,000 feet.
Author (revised)
*High Altitude Tests; Parachute Descent; Parachutes; Performance Tests*

**20070030981** NASA Langley Research Center, Hampton, VA USA
**Landing Characteristics of a Re-entry Vehicle with a Passive Landing System for Impact Alleviation**
Stubbs, Sandy M.; September 10, 1963; In English; See also 19640002968; See also NASA-TN-D-2035; Originally recorded in 16mm, Silent, Color, 180ft., 4.5min.; DVD produced from the original 16mm recording
Report No(s): L-807; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

An experimental investigation was made to determine the landing characteristics of a 1/8-scale dynamic model of a reentry vehicle using a passive landing system to alleviate the landing-impact loads. The passive landing system consisted of a flexible heat shield with a small section of aluminum honeycomb placed between the heat shield and the crew compartment at the point that would be the first to contact the landing surface. The model was landed on concrete and sand landing surfaces at parachute letdown velocities. The investigations simulated a vertical velocity of 30 ft/sec (full scale), horizontal velocities of 0, 15, 30, 40, and 50 ft/sec (full scale), and landing attitudes ranging from -30 degrees to 20 degrees. The model investigation indicated that stable landings could be made on a concrete surface at horizontal velocities up to about 30 ft/sec, but the stable landing-attitude range at these speeds was small. The aluminum honeycomb bottomed occasionally during landings on concrete. When bottoming did not occur, maximum normal and longitudinal accelerations at the center of gravity of the vehicle were approximately 50g and 30g, respectively.
Author
*Spacecraft Landing; Dynamic Models; Reentry Vehicles; Touchdown; Landing Loads*

**20070030982** NASA Langley Research Center, Hampton, VA USA
**Characteristics of a Lunar Landing Configuration Having Various Multiple-Leg Landing-Gear Arrangements**
Blanchard, Ulysse J.; September 08, 1963; In English; See also 19640005067; See also NASA-TN-D-2027; Originally recorded in 16mm, Silent, Color, 560ft., 15min.; DVD produced from the original 16mm recording
Report No(s): L-803; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

An experimental investigation has been made of some lunar-landing characteristics of a 1/6-scale dynamic model of a landing module having multiple-leg landing-gear systems. Symmetric four-point and five-point systems and an asymmetric four-point system were investigated. The landing-gear legs were inverted tripod arrangements having a telescoping main strut which incorporated a yielding-metal strap for energy dissipation, hinged V-struts, and circular pads. The landing tests were made by launching a free model onto an impenetrable hard surface (concrete) and onto a powdered-pumice overlay of various

depths. Landing motion and acceleration data were obtained for a range of touchdown speeds, touchdown speeds, touch attitudes, and landing-surface conditions. Symmetric four-point and five-point systems and an Maximum normal acceleration experienced at the module center of gravity during landings on hard surface or pumice was 2g (full-scale lunar value in terms of earth's gravity) over a wide range of touchdown conditions. Maximum angular acceleration experienced was 12-1/2 radians/sec(exp 2) and maximum longitudinal acceleration was 1-3/4 g. The module was very stable with all gear configurations during landings on hard surface (coefficient of friction, microns=0.4) at all conditions tested. Some overturn instability occurred during landings on powdered pumice (microns=0.7 to 1.0) depending upon flight path, pitch and yaw attitude, depth of pumice, surface topography, and landing-gear configuration. The effect of stability of roll attitude for the limited amount of roll-attitude landing data obtained was insignificant. Compared with the four-point system, the five-point system with equal maximum gear radius increased landing stability slightly and improved the static stability for subsequent lunar launch. A considerable increase in landing stability in the direction of motion was obtained with an asymmetric four-point gear having two pads offset to increase gear radius by 33 percent in the direction of horizontal flight.
Author
*Lunar Landing; Landing Gear; Scale Models; Dynamic Models; Lunar Landing Modules; Landing Simulation; Impact Tests*

**20070030983** NASA Langley Research Center, Hampton, VA USA
**Rendezvous Docking Simulator**
August 1963; In English; Originally recorded in 16mm, Color, 180ft., 5min.; DVD produced from the original 16mm recording
Report No(s): L-802; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The simulation demonstrated linear and gimbal motions of the capsule and a Gemini-Agena docking.
Derived from text
*Agena Rocket Vehicles; Spacecraft Docking; Gemini Spacecraft; Spacecraft Docking Modules*

**20070030985** NASA Langley Research Center, Hampton, VA USA
**Dynamic Model Investigation of a 1/20 Scale Gemini Spacecraft in the Langley Spin Tunnel**
Lee, Henry A.; Costigan, Peter J.; Bowman, James S., Jr.; November 15, 1963; In English; See also 19640010368; See also NASA-TN-D-2191; Originally recorded in 16mm, Silent, Black & White, 280ft., 10.5min
Report No(s): L-788; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The investigation was conducted in the Langley spin tunnel. The tunnel is an atmospheric wind tunnel with a vertically rising airstream in the test section and a maximum airspeed of approximately 90 feet per second. For this investigation, the model was hand launched into the vertically rising airstream. At times the model, both with and without a drogue parachute, was launched gently with as little disturbance as possible to determine what motions of the spacecraft were self-excited. At other times, the spacecraft with pre-deployed drogue parachute was launched into various spinning motions to determine the effectiveness of the drogue parachute in terminating these spinning motions. During drogue-parachute deployment tests, the spacecraft was launched into various spinning and tumbling motions and the drogue parachute was deployed. The motions of the model were photographed with a motion-picture camera, and some of the film records were read to obtain typical time histories of the model motion. The angles of attack indicated in the time histories presented are believed to be accurate within +/-1 degree. The mass and dimensional characteristics of the dynamic model are believed to be measured to an accuracy of: +/-1 percent for the weight, +/-1 percent for z(sub cg)/d, +/-15 percent for x (sub cg), and +/-5 percent for the moments of inertia. The towline and bridle-line lengths were simulated to an accuracy of +/-1 foot full scale.
Author (revised)
*Wind Tunnel Tests; Dynamic Models; Gemini Spacecraft; Drag Chutes; Spacecraft Stability; Spin Stabilization*

**20070030986** NASA Langley Research Center, Hampton, VA USA
**Investigation of the Landing Characteristics of a Re-entry Vehicle Having a Canted Multiple Air Bag Load Alleviation System**
McGehee, John R.; Stubbs, Sandy M.; May 15, 1963; In English; See also 19630008895; See also NASA-TN-D-1934; Originally recorded in 16mm, Silent, Color, 110ft., 3min.; DVD produced from the original 16mm recording

Report No(s): L-785; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

An investigation was made to determine the landing-impact characteristics of a reentry vehicle having a multiple-air-bag load-alleviation system. A 1/16-scale dynamic model having four canted air bags was tested at flight-path angles of 90 degrees (vertical), 45 degrees, and 27 degrees for a parachute or paraglider vertical letdown velocity of 30 feet per second (full scale). Landings were made on concrete at attitudes ranging from -l5 degrees to 20 degrees. The friction coefficient between the model heat shield and the concrete was approximately 0.4. An aluminum diaphragm, designed to rupture at 10.8 pounds per square inch gage, was used to maintain initial pressure in the air bags for a short time period.
Author
*Landing Loads; Reentry Vehicles; Dynamic Models; Spacecraft Landing; Air Bag Restraint Devices*

**20070030987** National Advisory Committee for Aeronautics. Langley Aeronautical Lab., Langley Field, VA USA
**Aeroelastic Tests of an Eight Percent Scale Saturn C-1 Block II**
March 04, 1963; In English; Originally recorded in 16mm, Sound, Color, 188ft., 5.25min.; DVD produced from the original 16mm recording
Report No(s): L-769; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Buffet and flutter characteristics of Saturn Apollo mission were studied using a dynamically scaled model. The model was built around a central aluminum tube for scaled stiffness distribution and strength to resist loads imposed during testing. Styrofoam sections attached to the core provided the correct external contours. Lead weights were added for correct mass distribution. An electromagnetic shaker was used to excite the model in its flexible modes of vibration during portions of the test. The model was supported on a sting, mounted by leaf springs, cables and torsion bars. The support system provided for simulating the full scale rigid body pitch frequency with minimum restraint imposed on elastic deflections. Bending moments recorded by sensors on the aluminum tube. Several modified nose configurations were tested: The basic configuration was tested with and without a flow separator disk on the escape rocket motor, tests also were made with the escape tower and rocket motor removed completely. For the final test, the Apollo capsule was replaced with a Jupiter nose cone. The test program consisted of determining model response throughout the transonic speed range at angles of attack up to 6 degrees and measuring the aerodynamic damping over the same range for the basic model and the modified configurations. Signals from the model pickup were recorded on tape for later analysis. The data obtained were used to estimate bending moments that would be produced on the full-scale vehicle by aerodynamic forces due to buffeting.
Derived from text
*Buffeting; Flutter Analysis; Aerodynamic Forces; Aeroelasticity; Saturn Launch Vehicles; Vibration; Bending Moments*

**20070030989** NASA Langley Research Center, Hampton, VA USA
**Tests of Dynamic Scale Model of Gemini Capsule in the Langley 20-Foot Free-Spinning Tunnel**
November 07, 1962; In English; Originally recorded in 16mm, Silent, Black & White, 27min DVD produced from the original 16mm recording
Report No(s): L-754; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The film shows three spin tunnel tests of a 1/20 scale model of the Gemini capsule. In the first test, the capsule spins freely. In tests 2 and 3, a drogue parachute is attached to the capsule.
CASI
*Gemini Spacecraft; Drag Chutes; Spin Tests; Wind Tunnel Tests*

**20070030990** NASA Langley Research Center, Hampton, VA USA
**Performance of a Towed, 48-Inch-Diameter (121.92) Ballute Decelerator Tested in Free-Flight Mach Numbers from 4.2 to 0.4**
Usry, J. W.; November 1968; In English; See also 19690008066; See also NASA-TN-D-4943; Originally recorded in 16mm, Silent, Color, 70ft., 2min.; DVD produced from the original 16mm recording
Report No(s): L-1002; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

A ballute decelerator inflated by ram air was tested in free flight to determine the inflation, drag, and stability

characteristics. The decelerator had a 40-inch (101.6-cm) envelope equatorial diameter and a 10-percent burble fence. It was towed 13.5 feet (4.12 m) aft of a cone-cylinder-flare payload with a maximum diameter of 18.21 inches (46.25 cm). The decelerator was deployed at an altitude of 115,000 feet (35.1 km) at a velocity of 4400 ft/sec (1342 m/sec) and inflated at a Mach number of 4.2 and a freestream dynamic pressure of 163 lb/ft(exp 2) (7.8 kN/m(exp 2)).
Author
*Ballutes; Supersonic Speed; Stability Tests; Lateral Control; Inflatable Structures*

**20070030991** NASA Langley Research Center, Hampton, VA USA
**Flight Test of a 40-Foot Nominal-Diameter Disk-Gap-Band Parachute Deployed at a Mach Number of 1.91 and a Dynamic Pressure of 11.6 Pounds per Square Foot**
Eckstrom, Clinton V.; Preisser, John S.; April 1968; In English; See also 19680014773; See also NASA-TM-X-1575; Originally recorded in 16mm, Silent, Color, 180ft., 5min.; DVD produced from the original 16mm recording
Report No(s): L-1000; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

A 40-foot (12.2 meter) nominal-diameter disk-gap-band parachute was flight tested as part of the NASA Supersonic Planetary Entry Decelerator Program (SPED-I). The test parachute was ejected by a deployment mortar from an instrumented payload at an altitude of 140,000 feet (42.5 kilometers). The payload was at a Mach number of 1.91 and the dynamic pressure was 11.6 pounds per square foot (555 newtons per square meter) at the time the parachute deployment mortar was fired. The parachute reached suspension line stretch in 0.43 second with a resultant snatch force loading of 1990 pounds (8850 newtons). The maximum parachute opening load of 6500 pounds (28,910 newtons) came 0.61 second later at a total elapsed time from mortar firing of 1.04 seconds. The first full inflation occurred at 1.12 seconds and stable inflation was achieved at approximately 1.60 seconds. The parachute had an average axial-force coefficient of 0.53 during the deceleration period. During the steady-state descent portion of the flight test, the average effective drag coefficient was also 0.53 and pitch-yaw oscillations of the canopy averaged less than 10 degrees in the altitude region above 100,000 feet (30.5 meters).
Author
*Supersonic Speed; Aerodynamic Coefficients; Parachute Descent; Aerodynamic Characteristics*

**20070030992** NASA Langley Research Center, Hampton, VA USA
**Summary of Attached Inflatable Decelerator (AID) Development**
April 08, 1968; In English; Originally recorded in 16mm, Silent, Color, 226ft., 6min.; DVD produced from the original 16mm recording
Report No(s): L-997; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Attached inflatable decelerators (AID) were tested in an environmental chamber, a spin tunnel, and a wind tunnel. Deployment tests were conducted in environmental chamber to examine guided and unguided water alcohol vapor inflation. Subsonic performance tests were conducted in the spin tunnel. The full-scale wind tunnel was used for AID gust and supersonic performance tests. The supersonic tests were conducted at Mach number 3.0 with 12 ounces of fluid and Mach number 2.2 with six ounces of fluid.
Derived from text
*Inflatable Structures; Aerodynamic Brakes; Supersonic Speed; Wind Tunnel Tests*

**20070030993** NASA Langley Research Center, Hampton, VA USA
**Excerpts from Test Films: Langley Impacting Structures Facility, Lunar Module**
January 1968; In English; Originally recorded in 16mm, Sound, Color, 105ft., 3min.; DVD produced from the original 16mm recording
Report No(s): L-996; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The film includes excerpts from three studies: (1) Landing characteristics of a dynamic model of the HL-10 manned lifting entry vehicle, conducted by Sandy M. Stubbs, in which the vehicle landed on water at horizontal velocities of 240- and 250-feet per second (ft/sec). (2) Dynamic model investigation of water pressures and accelerations encountered during landings of the Apollo spacecraft conducted by Sandy M. Stubbs, in which horizontal velocity was 50 ft/sec. and pitch attitude was -12 and -28 degrees. (3) Comparative landing impact tests of a 1/6-scale model as a free body under earth gravity and

a tethered full-scale lunar module on the Lunar Gravity Simulator. Landing 8 is shown, with a vertical velocity of 10 ft/sec. and a horizontal velocity of 8 ft/sec. Motion pictures were taken at 400 and 64 pps.
Derived from text
*Dynamic Models; Impact Tests; Manned Spacecraft; Horizontal Spacecraft Landing; Reentry Vehicles*

**20070030994** NASA Langley Research Center, Hampton, VA USA
**Flight Test of a 30-Foot Nominal Diameter Cross Parachute Deployed at a Mach Number of 1.57 and a Dynamic Pressure of 9.7 Pounds per Square Foot**
Eckstrom, Clinton V.; Preisser, John S.; March 1968; In English; See also 19680012309; See also NASA-TM-X-1542; Originally recorded in 16mm, Silent, Color, 120ft., 3.5min; DVD produced from the original 16mm recording
Report No(s): L-994; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

A 30-foot (9.1-meter) nominal-diameter cross-type parachute with a cloth area (reference area) of 709 square feet (65.9 square meters) was flight tested in the rocket-launched portion of the NASA Planetary Entry Parachute Program (PEPP). The test parachute was ejected from an instrumented payload by means of a mortar when the system was at a Mach number of 1.57 and a dynamic pressure of 9.7 psf. The parachute deployed to suspension-line stretch in 0.44 second with a resulting snatch-force loading of 1100 pounds (4900 newtons), Canopy inflation began at 0.58 second and a first full inflation was achieved at approximately 0.77 second. The maximum opening load occurred at 0.81 second and was 4255 pounds (18,930 newtons). Thereafter, the test item exhibited a canopy-shape instability in that the four panel arms experienced fluctuations, a 'scissoring' type of motion predominating throughout the test period. Calculated values of axial-force coefficient during the deceleration portion of the test varied between 0.35 and 1.05, with an average value of 0.69. During descent, canopy-shape variations had reduced to small amplitudes and resultant pitch-yaw angles of the payload with respect to the local vertical averaged less than 10 degrees. The effective drag coefficient, based on the vertical components of velocity and acceleration during system descent, was 0.78.
Author
*Aerodynamic Coefficients; Flight Tests; Parachutes; Parachute Descent*

**20070031001** NASA Langley Research Center, Hampton, VA USA
**Dynamic Model Investigation of Water Pressures and Accelerations Encountered During Landings of the Apollo Spacecraft**
Stubbs, Sandy M.; May 11, 1967; In English; See also 19670027235; See also NASA-TN-D-3980; Originally recorded in 6mm, Silent, Color, 205ft., 5.7min.; DVD produced from the original 16mm recording
Report No(s): L-960; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

An experimental investigation was made to determine impact water pressures, accelerations, and landing dynamics of a 1/4-scale dynamic model of the command module of the Apollo spacecraft. A scaled-stiffness aft heat shield was used on the model to simulate the structural deflections of the full-scale heat shield. Tests were made on water to obtain impact pressure data at a simulated parachute letdown (vertical) velocity component of approximately 30 ft/sec (9.1 m/sec) full scale. Additional tests were made on water, sand, and hard clay-gravel landing surfaces at simulated vertical velocity components of 23 ft/sec (7.0 m/sec) full scale. Horizontal velocity components investigated ranged from 0 to 50 ft/sec (15 m/sec) full scale and the pitch attitudes ranged from -40 degrees to 29 degrees. Roll attitudes were O degrees, 90 degrees, and 180 degrees, and the yaw attitude was 0 degrees.
Author
*Apollo Spacecraft; Water Pressure; Dynamic Models; Command Modules; Spacecraft Landing; Impact Loads; Landing Simulation*

**20070031002** NASA Langley Research Center, Hampton, VA USA
**Low Speed Dynamic Model Investigation of Apollo Command Module Configuration in the Langley Spin Tunnel**
Lee, Henry A.; Burk, Sanger M., Jr.; February 15, 1967; In English; See also 19670023693; See also NASA-TN-D-3888; Originally recorded in 16mm, Silent, Black & White, 165ft., 4.5min.; DVD produced from the original 16mm recording
Report No(s): L-948; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

An investigation has been conducted in the Langley spin tunnel to determine the dynamic stability of the Apollo command module at low subsonic speeds, both with and without drogue parachutes. The investigation consisted of tests to determine (1) the dynamic stability of the command module alone, (2) the motion of the command module during the deployment of a drogue parachute, (3) the effect of various drogue-parachute configurations on the stability of the command module, and (4) the effect of modifications to the command module to prevent an apex-forward trim condition.
Author
*Command Modules; Apollo Spacecraft; Dynamic Models; Wind Tunnel Tests; Drag Chutes*

**20070031004** NASA Langley Research Center, Hampton, VA USA
**Dynamic Model Investigation of the Rough-Water Landing Characteristics of a Spacecraft**
Thompson, William C.; November 1966; In English; See also 19670013952; See also NASA-TN-D-3774; Originally recorded in 16mm, Silent, Color, 135ft., 3.5min.; DVD produced from the original 16mm recording
Report No(s): L-940; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The investigation was made to study the rough-water landing characteristics of a Gemini type of spacecraft. The investigations were made with a 1/6-scale dynamic model in a simulated sea state 4 rough water. Parachute letdown landings were simulated with the model at various yaw angles and horizontal velocities. The vertical velocity and landing attitude remained constant. The range of maximum lateral and longitudinal acceleration was from about 3-1/2g to 16g while that for the maximum normal acceleration was from lg to 15g. The range of maximum angular acceleration was from about 0 to 190 radians per second(exp 2). The smoothest behavior and the lowest angular acceleration occurred at the 90 degree yaw angle. The normal acceleration was near minimum at this condition.
Author
*Gemini Spacecraft; Dynamic Models; Water Landing; Yaw; Spacecraft Landing*

**20070031006** NASA Langley Research Center, Hampton, VA USA
**Deployment and Performance Characteristics of 5-Foot Diameter (1.5m) Attached Inflatable Decelerators from Mach Numbers 2.2-4.4**
Bohon, Herman L.; Miserentino, Robert; May 1970; In English; See also 19700026642; See also NASA-TN-D5840; Originally recorded in 16mm, Silent, Color, 160ft., 4.5min.; DVD produced from the original 16mm recording
Report No(s): L-1080; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Deployment characteristics and steady-state performance data were obtained over the Mach number range from 2.2 to 4.4 and at angles of attack from 0 degrees to l0 degrees. All attached inflatable decelerator (AID) models deployed successfully and exhibited flutter-free performance after deployment. Shock loads commonly associated with inflation of parachutes during deployment were not experienced. Force and moment data and ram-air pressure data were obtained throughout the Mach number range and at angles of attack from 0 degrees to l0 degrees. The high drag coefficient of 1.14 was in good agreement with the value predicted by the theory used in the design and indicated other AID shapes may be designed on a rational basis with a high degree of confidence.
Author
*Inflatable Structures; Aerodynamic Brakes; Parachutes; Supersonic Speed; Wind Tunnel Tests; Deceleration*

**20070031010** NASA Langley Research Center, Hampton, VA USA
**Scaled Lunar Module Jet Erosion Experiments**
Land, Norman S.; Scholl, Harland F.; March 04, 1966; In English; See also 19690013268; See also NASA-TN-D-5051; Originally recorded in 16mm, Silent, Color, 185ft., 5.1min.; DVD produced from the original 16mm recording
Report No(s): L-1043; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

An experimental research program was conducted on the erosion of particulate surfaces by a jet exhaust. These

experiments were scaled to represent the lunar module (LM) during landing. A conical cold-gas nozzle simulating the lunar module nozzle was utilized. The investigation was conducted within a large vacuum chamber by using gravel or glass beads as a simulated soil. The effects of thrust, descent speed, nozzle terminal height, particle size on crater size, and visibility during jet erosion were determined.
Author
*Jet Exhaust; Conical Nozzles; Descent; Visibility; Soil Erosion; Lunar Landing Modules*

**20070031011** NASA Langley Research Center, Hampton, VA USA
**Flight Tests Results from Supersonic Deployment of an 18-Foot Diameter (5.49 meter) Towed Ballute Decelerator**
Mayhue, Robert J.; Eckstrom, Clinton V.; March 1969; In English; See also 19690017080; See also NASA-TM-X-1773; Originally recorded in 16mm, Silent, Color, 112ft., 3min.; DVD produced from the original 16mm recording
Report No(s): L-1045; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

A ram-air-inflated, towed ballute decelerator having a maximum frontal diameter of 18 feet (5.49 meters) was deployed during free flight at a Mach number of 3.15 and a dynamic pressure of 38.5 lb/ft(exp 2) (1843.4 newtons/m(exp 2)). Deployment and extraction of the test ballute were normal but inflation stopped about 1 second after mortar firing and produced an average plateau drag force of 1500 pounds (6.7 kN) for about 1 second. Approximately 30 percent of expected total frontal area was obtained.
Author
*Flight Tests; Ballutes; Supersonic Speed; Failure*

**20070031012** NASA Langley Research Center, Hampton, VA USA
**Flight Test of a 40-Foot Nominal Diameter Disk-Gap-Band Parachute Deployed at a Mach Number of 3.31 and a Dynamic Pressure of 10.6 Pounds per Square Foot**
Eckstrom, Clinton V.; November 1969; In English; See also 19700010021; See also NASA-TM-X-1924; Originally recorded in 16mm, Silent, Color, 116ft., 3.2min.; DVD produced from the original 16mm recording
Report No(s): L-1066; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

A 40-foot-nominal-diameter (12.2 meter) disk-gap-band parachute was flight tested as part of the NASA supersonic high altitude parachute experiment (SHAPE) program. The test parachute (which included an experimental energy absorber in the attachment riser) was deployed from an instrumented payload by means of a deployment mortar when the payload was at a Mach number of 3.31 and a free-stream dynamic pressure of 10.6 pounds per square foot (508 newtons per square meter). The parachute deployed properly, the canopy inflating to a full-open condition at 1.03 seconds after mortar firing. The first full inflation of the canopy was immediately followed by a partial collapse with subsequent oscillations of the frontal area from about 30 to 75 percent of the full-open frontal area. After 1.07 seconds of operation, a large tear appeared in the cloth near the canopy apex. This tear was followed by two additional tears shortly thereafter. It was later determined that a section of the canopy cloth was severely weakened by the effects of aerodynamic heating. As a result of the damage to the disk area of the canopy, the parachute performance was significantly reduced; however, the parachute remained operationally intact throughout the flight test and the instrumented payload was recovered undamaged.
Author
*Aerodynamic Drag; Flight Tests; Parachutes; Supersonic Speed; Fabrics*

## 19
## SPACECRAFT INSTRUMENTATION AND ASTRIONICS

Includes the design, manufacture, or use of devices for the purpose of measuring, detecting, controlling, computing, recording, or processing data related to the operation of space vehicles or platforms. For related information see also *06 Avionics and Aircraft Instrumentation*; for spaceborne instruments not integral to the vehicle itself see *35 Instrumentation and Photography*; for spaceborne telescopes and other astronomical instruments see *89 Astronomy*.

**19940014483** NASA Marshall Space Flight Center, Huntsville, AL, USA
**ASTRO-1 to explore invisible universe**
Nov 1, 1989; In English
Report No(s): MSFC-16527; NASA-TM-109360; NONP-NASA-VT-94-198207; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video explains the ASTRO 1 observatory and its ten day mission aboard SpaceLab on NASA's Space Shuttle, which Marshall Space Flight Center (MSFC) and Goddard Space Flight Center (GSFC) astronomers will use to study distant stars, supernovae, and black holes. The observatory contains ultraviolet and x ray telescopes that will capture images earth-bound observatories can't, due to interference from the earth's atmosphere. The video contains footage of the instrument being loaded on the shuttle, animations of anticipated images to be captured, and scenes of the SpaceLab Control Center at MSFC.
CASI
*Astro Missions (STS); Ground Stations; Loading Operations; Spaceborne Astronomy; Spaceborne Telescopes*

## 20
## SPACECRAFT PROPULSION AND POWER

Includes main propulsion systems and components, e.g., rocket engines; and spacecraft auxiliary power sources. For related information see also *07 Aircraft Propulsion and Power, 28 Propellants and Fuels, 15 Launch Vehicles and Launch Operations*, and *44 Energy Production and Conversion*.

**19940010756** NASA Marshall Space Flight Center, Huntsville, AL, USA
**Advanced Solid Rocket Motor**
Mar 1, 1989; In English
Report No(s): MSFC-14565; NASA-TM-109658; NONP-NASA-VT-93-190456; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video tape describes the redesign and construction of the Advanced Solid Rocket Motor.
CASI
*Advanced Solid Rocket Motor (STS); Solid Propellant Rocket Engines*

## 24
## COMPOSITE MATERIALS

Includes physical, chemical, and mechanical properties of laminates and other composite materials.

**20070030949** NASA Langley Research Center, Hampton, VA USA
**Thermo-Lag Ablation Tests**
January 08, 1960; In English; Originally recorded in 16mm, Silent, Color, 1130ft., 31min.; DVD produced from the original 16mm recording
Report No(s): L-516; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Thermo-lag, an ablation material made by Emerson Electric Co., was tested in the preflight jet at Wallops Island, VA. Variables included temperature and mach number.
Derived from text
*Ablative Materials; Temperature Effects; High Temperature Tests*

## 26
## METALS AND METALLIC MATERIALS

Includes physical, chemical, and mechanical properties of metals and metallic materials; and metallurgy.

**19940009143** NASA Marshall Space Flight Center, Huntsville, AL, USA
**Mid-deck experiments, STS-26**
Sep 1, 1988; In English
Report No(s): MSFC-13384; NASA-TM-109308; NONP-NASA-VT-93-185326; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

Phase partitioning, ISO electric focusing, automated directional solidification furnace, mesoscale experiment, and others are explained.
Author (revised)
*Space Shuttle Payloads; Spaceborne Experiments*

## 27
## NONMETALLIC MATERIALS

Includes physical, chemical, and mechanical properties of plastics, elastomers, lubricants, polymers, textiles, adhesives, and ceramic materials. For composite materials see *24 Composite Materials*.

**20070030959** National Advisory Committee for Aeronautics. Langley Aeronautical Lab., Langley Field, VA USA
**Experimental Ablation Cooling**
Bond, Aleck C.; Rashis, Bernard; Levin, L. Ross; February 07, 1958; In English; See also 19930090170; See also NACA-RM-L58E15a; Originally recorded in 16mm, Silent, Black & White, 330 feet, 9 minutes; DVD produced from the original 16mm recording
Report No(s): L-296; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

The film shows ablation tests on Teflon, nylon, a 27 percent phenolic resin, Haveg Rocketon, and graphite. Teflon hemisphere-shaped and flat face noses were tested with laboratory-scale ceramic-heated, pilot-model ceramic-heated, and electric-arc-powered air jets. Nylon hemisphere-shaped noses were tested with laboratory-scale ceramic-heated and electric-arc-powered air jets. Phenolic resin hemisphere-shaped noses were tested with laboratory-scaled ceramic-heated air jets. Haveg Rocketon and graphite hemisphere-shaped noses were tested with electric-arc-powered air jets.
Derived from text
*Ablation; Ablative Materials; Cooling; High Temperature Tests; Ablative Nose Cones; Aerodynamic Heating*

## 32
## COMMUNICATIONS AND RADAR

Includes radar; radio, wire, and optical communications; land and global communications; communications theory. For related information see also 04 Aircraft Communications and Navigation; and *17 Space Communications, Spacecraft Communications, Command and Tracking*; for search and rescue, see *03 Air Transportation and Safety*; and *16 Space Transportation and Safety*.

**19940010819** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**COBE video news**
Oct 1, 1989; In English
Report No(s): GSFC-S-20; NASA-TM-109598; NONP-NASA-VT-93-190396; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This videotape was produced for hand-out to both local and national broadcast media as a prelude to the launch of the Cosmic Background Explorer. The tape consists of short clips with multi-channel sound to facilitate news media editing.
CASI
*Cosmic Background Explorer Satellite; News Media; Spacecraft Launching*

## 34
## FLUID MECHANICS AND THERMODYNAMICS

Includes fluid dynamics and kinematics and all forms of heat transfer; boundary layer flow; hydrodynamics; hydraulics; fluidics; mass transfer and ablation cooling. For related information see also *02 Aerodynamics*.

**20070030953** National Advisory Committee for Aeronautics. Langley Aeronautical Lab., Langley Field, VA USA
**Flow Studies of Decelerators at Supersonic Speeds**
March 26, 1959; In English; Originally recorded in 16mm, Silent, Black & White, 350ft., 10min.; DVD produced from the original 16mm recording
Report No(s): L-445; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Wind tunnel tests recorded the effect of decelerators on flow at various supersonic speeds. Rigid parachute models were tested for the effects of porosity, shroud length, and number of shrouds. Flexible model parachutes were tested for effects of porosity and conical-shaped canopy. Ribbon dive brakes on a missile-shaped body were tested for effect of tension cable type and ribbon flare type. The final test involved a plastic sphere on riser lines.
CASI
*Wind Tunnel Tests; Porosity; Supersonic Speed; Drag Chutes; Supersonic Flow*

## 35
## INSTRUMENTATION AND PHOTOGRAPHY

Includes remote sensors; measuring instruments and gages; detectors; cameras and photographic supplies; and holography. For aerial photography see *43 Earth Resources and Remote Sensing*. For related information see also *06 Avionics and Aircraft Instrumentation*; and *19 Spacecraft Instrumentation and Astrionics*.

**19970035033** NASA Lewis Research Center, Cleveland, OH USA
**Improved Optical Techniques for Studying Sonic and Supersonic Injection into Mach 3 Flow**
Buggele, Alvin E.; Seasholtz, Richard G.; Sep. 1997; 21 pp.; In English; 42nd International Society for Optical Engineering Conference, 27 Jul. - 1 Aug. 1997, San Diego, CA, USA; Original contains color illustrations
Contract(s)/Grant(s): RTOP 953-74-40
Report No(s): NASA-TM-107533; NAS 1.15:107533; E-10853; NONP-NASA-VT-1997067113; No Copyright; Avail: CASI: A03, Hardcopy: V01, Videotape-VHS: B01, Videotape-Beta
ONLINE: http://hdl.handle.net/2060/19970035033

Filtered Rayleigh Scattering and shadowgraph flow visualization were used to characterize the penetration of helium or moist air injected transversely at several pressures into a Mach 3 flow in the NASA Lewis 3.81 inch by 10 inch continuous flow supersonic wind tunnel. This work is in support of the LOX (liquid oxygen) Augmented Nuclear Thermal Rocket program. The present study used an injection-seeded, frequency doubled ND:YAG pulsed laser to illuminate a transverse section of the injectant plume. Rayleigh scattered light was passed through an iodine absorption cell to suppress stray laser light and was imaged onto a cooled CCD camera. The scattering was based on condensation of water vapor in the injectant flow. Results are presented for various configurations of sonic and supersonic injector designs mounted primarily in the floor of the tunnel. Injectors studied include a single 0.25 inch diameter hole, five 0. 1 12 inch diameter holes on 0. 177 inch spacing, and a 7 deg. half angle wedge. High speed shadowgraph flow visualization images were obtained with several video camera systems. Roof and floor static pressure data are presented several ways for the three configurations of injection designs with and without helium and/or air injection into Mach 3 flow. A 12 min. video supplement is also included.
Author
*Rayleigh Scattering; Shadowgraph Photography; Flow Visualization; Fluid Injection; Helium; Injectors; Fuel Injection; Supersonic Flow; Wind Tunnel Tests; Water Vapor; Continuum Flow; Pulsed Lasers*

# 37
# MECHANICAL ENGINEERING

Includes mechanical devices and equipment; machine elements and processes. For cases where the application of a device or the host vehicle is emphasized see also the specific category where the application or vehicle is treated. For robotics see *63 Cybernetics, Artificial Intelligence, and Robotics*; and *54 Man/System Technology and Life Support*.

**19940009131** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**Goddard Space Flight Center robotics demo**
Nov 1, 1988; In English
Report No(s): GSFC-S-06; NASA-TM-109302; NONP-NASA-VT-93-185317; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

Documentary footage of a fascinating look at Goddard Space Flight Center's Robotic Capability during a demonstration by Goddard robotics engineers is presented.
Author
*Documentation; NASA Programs; Robot Control; Robotics; Tests*

**19940010790** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**Robotics for Space Station tape 2**
Sep 1, 1989; In English
Report No(s): NASA-TM-109578; NONP-NASA-VT-93-190376; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS

This video shows robotics for the Space Station.
CASI
*Robotics; Space Stations*

**19940010795** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**Robotics in space**
Nov 1, 1988; In English
Report No(s): GSFC-S-05; NASA-TM-109584; NONP-NASA-VT-93-190382; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

Produced for the AIAA symposium, this fast paced video shows robotics and telerobotics in the exploration of space.
CASI
*Robotics; Space Exploration*

**19940010799** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**Robotics for Space Station, tape 1**
Aug 1, 1989; In English
Report No(s): GSFC-T-16; NASA-TM-109588; NONP-NASA-VT-93-190386; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS

Shot on location at the Goddard Robotics Laboratory, this video uses state of the art Wavefront animation to take the viewer on a tour of the robotics that may, someday, be a part of Space Station Freedom.
CASI
*Robotics; Space Station Freedom*

**19940029611** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**Robotics Demo Peer Group review**
JAN 1, 1994; In English
Report No(s): NASA-TM-109849; NONP-NASA-VT-94-13714; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This animated color video shows the Shuttle robot arm performing construction on the Spacelab.
CASI
*Remote Manipulator System; Robot Arms; Telerobotics*

## 38
## QUALITY ASSURANCE AND RELIABILITY

Includes approaches to, and methods for reliability analysis and control, quality control, inspection, maintainability, and standardization.

**19940029215** NASA Marshall Space Flight Center, Huntsville, AL, USA
**Activities of the NASA centers**
Nov 1, 1989; In English
Report No(s): MSFC-682; NASA-TM-109836; NONP-NASA-VT-94-12964; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video highlights the NASA centers and their activities. Additionally, the commitment of the NASA centers to quality assurance is presented.
CASI
*NASA Programs; Quality Control; Research Facilities*

## 43
## EARTH RESOURCES AND REMOTE SENSING

Includes remote sensing of earth features, phenomena and resources by aircraft, balloon, rocket, and spacecraft; analysis of remote sensing data and imagery; development of remote sensing products; photogrammetry; and aerial photography. For related instrumentation see *35 Instrumentation and Photography*.

**19970020396** NASA Goddard Space Flight Center, Greenbelt, MD USA
**Glacier Bay, Alaska, from the Ground, Air, and Space**
Hall, Dorothy K.; Feb. 23, 1997; In English; Videotape: 13 min. 13 sec. playing time, in color, with sound
Report No(s): NASA-TM-112631; NONP-NASA-VT-1997032489; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This tape uses a combination of video, three-dimensional computer imaging, and still photographs to provide a descriptive overview of the life-cycle and environmental effects of glaciers. An historical prospective of researchers and the contribution that they have made to the understanding of glaciers and Glacier Bay is presented. The data collected from these scientists have been documented and used by means of scientific visualization in the hope of learning how glacial activity relates to climate changes.
CASI
*Glaciers; Environment Effects; Scientific Visualization; Climate Change; Glacial Drift; Satellite Imagery; Imaging Techniques*

**19970041021** North Dakota Univ., Grand Forks, ND USA
**What is the Value of Space Exploration? - A Prairie Perspective**
1995; 48 pp.; In English; FROM What is the Value of Space Exploration? - A Prairie Perspective, 1-2 Nov. 1995, Grand Forks, ND, USA
Contract(s)/Grant(s): NAGw-4524
Report No(s): NASA/CR-97-205930; NONP-NASA-VT-1997082334; NAS 1.26:205930; No Copyright; Avail: CASI: A03, Hardcopy: V02, Videotape-VHS
ONLINE: http://hdl.handle.net/2060/19970041021

The symposium addresses different topics within Space Exploration. The symposium was fed, using satellite downlinks, to several communities in North Dakota, the first such symposium of its type ever held. The specific topics presented by different community members within the state of North Dakota were: the economic, cultural, scientific and technical, political, educational and social value of Space Exploration. Included is a 22 minute VHS video cassette highlighting the symposium.
CASI
*Conferences; North Dakota; Space Exploration; Education*

## 45
## ENVIRONMENT POLLUTION

Includes atmospheric, water, soil, noise, and thermal pollution.

**19940009129** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**Arctic ozone expedition**
Feb 1, 1989; In English
Report No(s): GSFC-S-14; NASA-TM-109301; NONP-NASA-VT-93-185316; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS

Documenting the expedition of scientists to the uppermost reaches of the North Pole, this tape shows what is involved in collecting this valuable climatic data.
Author
*Arctic Regions; Data Acquisition; Ozone; Polar Meteorology*

**19940010817** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**TOMS computer graphics**
Nov 1, 1988; In English
Report No(s): GSFC-S-16; NASA-TM-109597; NONP-NASA-VT-93-190395; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This videotape explains how NASA participated in controlling the devastating forest fires that consumed parts of Yellowstone National Park.
CASI
*Computer Graphics; Forest Fires; Total Ozone Mapping Spectrometer; Yellowstone National Park (ID-MT-WY)*

**19940010856** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**Atlas of TOMS ozone, 1978-1988**
Feb 1, 1989; In English
Report No(s): GSFC-S-15; NASA-TM-109456; NONP-NASA-VT-93-190253; No Copyright; Avail: CASI: B03, Videotape-Beta: V03, Videotape-VHS

This video contains very graphic images of the seasonal accumulation and depletion of the world’s ozone layer, as depicted by the Total Ozone Mapping Satellite (TOMS).
CASI
*Annual Variations; Ozone; Ozone Depletion; Ozonosphere; Total Ozone Mapping Spectrometer*

**19940014494** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**October 1979-1989 Southern Hemisphere total ozone as seen by TOMS**
Nov 1, 1989; In English
Report No(s): GSFC-T-25; NASA-TM-109375; NONP-NASA-VT-94-198222; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This is raw video from space taken by the Total Ozone Mapping Satellite (TOMS).
CASI
*Ozone; Total Ozone Mapping Spectrometer*

**19950004307** NASA Dryden Flight Research Center, Edwards, CA, USA, Department of the Air Force, Edwards AFB, CA, USA
**The desert tortoise: A delicate balance**
Aug 1, 1992; In English
Report No(s): NASA-TM-104294; NONP-NASA-VT-94-23639; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This award winning program looks at the efforts to preserve the desert tortoise in and around the Edwards Air Force Base,

CA area. It also explains what people should do if they come in contact with a tortoise. This video was produced in cooperation with Edwards Air Force Base.
DFRC
*Endangered Species; Environment Protection; Mojave Desert (CA); Turtles*

**19950011633** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**Evolution of the Southern Hemisphere ozone hole as seen by TOMS from August 1979 to December 1991**
Aug 3, 1994; In English
Report No(s): NASA-TM-110116; NONP-NASA-VT-95-37003; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

The computerized color images of the Total Ozone Mapping Spectrometer (TOMS) showed the ozone distribution and levels in the Earth's southern hemisphere from August 1979 to December 1991 in this video. The annual variations were presented in a monthly format and the ozone levels were measured in Dobson units.
CASI
*Annual Variations; Atmospheric Circulation; Computer Graphics; Earth Atmosphere; Ozone Depletion; Southern Hemisphere; Total Ozone Mapping Spectrometer*

## 46
## GEOPHYSICS

Includes Earth structure and dynamics, aeronomy; upper and lower atmosphere studies; ionospheric and magnetospheric physics; and geomagnetism. For related information see *47 Meteorology and Climatology*; and *93 Space Radiation*.

**19940009147** NASA Marshall Space Flight Center, Huntsville, AL, USA
**CRRES to blaze new trails in orbit**
Jul 1, 1990; In English
Report No(s): MSFC-17817; NASA-TM-109314; NONP-NASA-VT-93-185329; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

The purpose of the Combined Release Radiation Effects Satellite in re-mapping and planning protection for future spacecraft is described.
Author (revised)
*CRRES (Satellite); Radiation Protection; Spacecraft Shielding*

**19940010809** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**Southern and Northern Hemisphere total ozone as seen by TOMS**
Mar 1, 1989; In English
Report No(s): GSFC-S-31; NASA-TM-109591; NONP-NASA-VT-93-190389; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS

This videotape contains raw footage of this planet's upper atmosphere for use in the preparation of environmental and Earth monitoring presentation.
CASI
*Northern Hemisphere; Ozone; Southern Hemisphere; Total Ozone Mapping Spectrometer; Upper Atmosphere*

## 47
## METEOROLOGY AND CLIMATOLOGY

Includes weather observation forecasting and modification.

**19940010753** NASA Marshall Space Flight Center, Huntsville, AL, USA

**Mesoscale lightning**

Apr 1, 1989; In English

Report No(s): MSFC-14733; NASA-TM-109655; NONP-NASA-VT-93-190453; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video tape addresses ongoing lightning research and how data is valuable to upcoming projects.

CASI

*Lightning; Mesoscale Phenomena*

## 48
## OCEANOGRAPHY

Includes the physical, chemical and biological aspects of oceans and seas; ocean dynamics; and marine resources. For related information see also *43 Earth Resources and Remote Sensing*.

**19940010808** NASA Goddard Space Flight Center, Greenbelt, MD, USA

**Coastal zone color scanner: Nimbus 7**

May 1, 1989; In English

Report No(s): GSFC-S-34; NASA-TM-109590; NONP-NASA-VT-93-190388; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This videotape is a soundless presentation showing the global ocean color for scientific purposes. The tape makes excellent B-roll for use in editing.

CASI

*Coastal Zone Color Scanner; Nimbus 7 Satellite; Oceans; Water Color*

## 52
## AEROSPACE MEDICINE

Includes the biological and physiological effects of atmospheric and space flight (weightlessness, space radiation, acceleration, and altitude stress) on the human being; and the prevention of adverse effects on those environments. For psychological and behavioral effects of aerospace environments, see *53 Behavioral Sciences*. For the effects of space on animals and plants see *51 Life Sciences*.

**19940010798** NASA Goddard Space Flight Center, Greenbelt, MD, USA

**GSFC Fun Run**

Oct 1, 1988; In English

Report No(s): GSFC-P-20; NASA-TM-109587; NONP-NASA-VT-93-190385; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video shows Goddard's commitment to it's employees physical well-being by highlighting the Spring 1988 Goddard Fun Run.

CASI

*Physical Exercise; Recreation*

**20070030954** National Advisory Committee for Aeronautics. Langley Aeronautical Lab., Langley Field, VA USA

**Studies of Accelerations in Manned Vehicles During Exit and Reentry Flight**

February 19, 1959; In English; Originally recorded in 16mm, Silent, Color, Black & White, 340ft, 9.5min.; DVD produced from the original 16mm recording

Report No(s): L-431; No Copyright; Avail: CASI: C01, DVD; Movie/Video (High Res)
ONLINE: View Movie/Video (Low Res); View Movie/Video (Medium Res)

Several experiments with human centrifugation are shown with subjects wearing different flight suits.
CASI
*Human Centrifuges; Manned Reentry; Centrifugal Force; Acceleration Stresses (Physiology)*

## 55
## EXOBIOLOGY

Includes astrobiology; planetary biology; and extraterrestrial life. For the biological effects of aerospace environments on humans see *52 Aerospace Medicine*; on animals and plants see *51 Life Sciences*. For psychological and behavioral effects of aerospace environments see *53 Behavioral Sciences*.

**20040201037** NASA, Washington, DC, USA
**Living Places in Other Solar Systems**
[2004]; 2 pp.; In English; 1 hr., 50 min. playing time, in color, with sound; No Copyright; Avail: CASI: V04, Videotape-VHS

Dr. Sargent noted that evidence of other solar systems that might sustain life, particularly human life, is being sought. Protoplanetary (or debris) disks have been observed and are considered evidence that other solar systems exist or are being formed. Also observed is a wobble which is seen as evidence of circulation around a celestial body and gaps that are created by the potential planet. One indicator of life may be these rings or disks of debris around stars. Interferometers, which are telescopic devices that consist of multiple lenses, are being developed in order to better see celestial objects and what may be found around them. Other methods for improving celestial viewing capabilities are also under development. She spoke of particularly looking for wobble and gaps and debris disks where new planets are being formed in an effort to discover another planet that might sustain life as we know it. The next speaker, Dr. Chris McKay, is a planetary scientist at NASA Ames. He talked about the possibility of life on Mars or in some other solar system. He commented on the sameness of the origin of all life, and of the origin of, and the need for, oxygen and water. He believes that water originally came to Earth from comets. At least that is a viable possible source. Water might also have come to Earth via asteroids. Dr. McKay also postulates that there can be no water on Mars because Mars has no plate tectonic system, which he believes is an essential for recycling water. . Dr. Wes Huntress, NASA s Associate Administrator for Space Science, and Dr. Barbara Stone, also from NASA Headquarters, joined Drs. Cordova, Sargent and McKay in the question and answer period following the presentations. (Mr. Goldin was excused to keep an appointment with the President.) The discussion included the following statements and questions: The more missions that there are, the more technology is developed. We need to study our solar system to have something to which we can compare other systems. Before we send people to distant places or to other planets, we need to study the psychological and biological problems that are created by going away from Earth for a long period of time. Pulsars appear to have planets rotating around them. This is of interest and should be studied further. Looking back in time, is there any thought to seeing the development of life? How long did it take for oxygen to rise on the Earth? Do debris disks around the stars provide velocity patterns? To detect life scientists are listening for radio signals, looking for oxygen or ozone, and looking for liquid water. On Earth liquid water is the defining ecological parameter for life. This means that operationally the search for life elsewhere is primarily a search for liquid water.
Derived from text
*Biological Evolution; Extraterrestrial Life; Mars Surface; Radio Signals*

## 60
## COMPUTER OPERATIONS AND HARDWARE

Includes hardware for computer graphics, firmware and data processing. For components see *33 Electronics and Electrical Engineering*. For computer vision see *63 Cybernetics, Artificial Intelligence and Robotics*.

**19940010755** NASA Marshall Space Flight Center, Huntsville, AL, USA
**NASA Spacelink computer**
May 1, 1989; In English
Report No(s): NASA-TM-109657; NONP-NASA-VT-93-190455; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video tape introduces Spacelink, a computer resource that educators and students can access. The purpose of Spacelink is to stimulate interest in math and science.
CASI
*Computers; Education; Information Systems*

## 70
## PHYSICS (GENERAL)

Includes general research topics related to mechanics, kinetics, magnetism, and electrodynamics. For specific areas of physics see *categories 71 through 77*. For related instrumentation see *35 Instrumentation and Photography*; for geophysics, astrophysics, or solar physics see *46 Geophysics, 90 Astrophysics*, or *92 Solar Physics*.

**19940010760** NASA Marshall Space Flight Center, Huntsville, AL, USA
**Automated directional solidification furnace**
Aug 1, 1989; In English
Report No(s): MSFC-13233; NASA-TM-109662; NONP-NASA-VT-93-190460; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video presentation addresses space research supporting the development of longer lasting, lighter weight, and more powerful magnets.
CASI
*Directional Solidification (Crystals); Furnaces; Magnets*

## 80
## SOCIAL AND INFORMATION SCIENCES (GENERAL)

Includes general research topics related to sociology; educational programs and curricula. For specific topics in these areas see *categories 81 through 85*.

**19940010757** NASA Marshall Space Flight Center, Huntsville, AL, USA
**SHARP**
Jan 1, 1989; In English
Report No(s): MSFC-14171; NASA-TM-109659; NONP-NASA-VT-93-190457; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video tape describes the benefits of NASA's Summer High School Apprenticeship Research Program to participating students.
CASI
*Education; NASA Programs*

**19940010759** NASA Marshall Space Flight Center, Huntsville, AL, USA
**Space classroom**
Nov 1, 1990; In English
Report No(s): MSFC-17816; NASA-TM-109661; NONP-NASA-VT-93-190459; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video presentation provides information on the first classroom taught from space to encourage student interest in astronomy and space exploration.
CASI
*Education; NASA Programs*

**19940014509** NASA Marshall Space Flight Center, Huntsville, AL, USA
**National Boy Scout Jamboree**
Aug 1, 1989; In English
Report No(s): MSFC-16553; NASA-TM-109367; NONP-NASA-VT-94-198214; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video looks at a NASA sponsored exhibit at the National Boy Scout Jamboree in Fredricksburg, VA. Boy Scouts are shown interacting with NASA researchers and astronauts and touring mockups of Space Station Freedom and Apollo 11. NASA's program to encourage the researchers of tomorrow is detailed.
CASI
*Astronauts; NASA Programs; Students*

**19950023802** NASA Marshall Space Flight Center, Huntsville, AL, USA
**International Space University**
Kassler, Maggie, editor; Aug 9, 1993; In English
Report No(s): NASA-TM-110646; NONP-NASA-VT-95-57868; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS
The International Space University (ISU) is described in this video, hosted by Marina Sirtis from the 'Star Trek' television show's Starship Enterprise. A complete explanation of what ISU is, how the university functions, and the benefits that the university provides are described. Included are brief comments from former ISU graduates.
CASI
*Space Programs; Universities; University Program*

## 81
## ADMINISTRATION AND MANAGEMENT

Includes management planning and research.

**19940009156** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**NASA experiences in the Goddard MMS**
Jan 1, 1989; In English
Report No(s): GSFC-S-24; NASA-TM-109290; NONP-NASA-VT-93-185305; No Copyright; Avail: CASI: B03, Videotape-Beta: V03, Videotape-VHS
The GSFC connection in the multi-mission spacecraft management field is explored.
Author (revised)
*Multimission Modular Spacecraft; NASA Programs*

**19940010761** NASA Marshall Space Flight Center, Huntsville, AL, USA
**Return to flight 1**
Sep 1, 1987; In English
Report No(s): MSFC-14245; NASA-TM-109663; NONP-NASA-VT-93-190461; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS
This video tape presents a dynamic overview of the hard work and tireless efforts of NASA employees and contractors.
CASI
*NASA Programs; Research and Development*

**19940010820** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**PET team**
Mar 1, 1989; In English
Report No(s): MSFC-13056; NASA-TM-109599; NONP-NASA-VT-93-190397; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS
This videotape shows the Productivity Enhancement Team's (PET) presentation to management regarding ways to make the workforce more responsive to overall corporate goals.
CASI
*Organizations; Personnel Development; Productivity*

**19940010846** NASA Marshall Space Flight Center, Huntsville, AL, USA
**Return to flight 3, the journey continues**
Feb 1, 1989; In English
Report No(s): MSFC-14858; NASA-TM-109651; NONP-NASA-VT-93-190449; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This videotape presents a dynamic overview of the hard work and tireless efforts of NASA employees and contractors.
CASI
*NASA Programs; Personnel*

## 82
## DOCUMENTATION AND INFORMATION SCIENCE

Includes information management; information storage and retrieval technology; technical writing; graphic arts; and micrography. For computer program documentation see *61 Computer Programming and Software*.

**19940010758** NASA Marshall Space Flight Center, Huntsville, AL, USA
**University Joint Venture: JOVE**
Mar 1, 1989; In English
Report No(s): MSFC-14546; NASA-TM-109660; NONP-NASA-VT-93-190458; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video presentation explains how NASA shares its several trillion bits of raw science and engineering data with universities who help NASA analyze and distribute that data.
CASI
*NASA Programs; University Program*

## 88
## SPACE SCIENCES (GENERAL)

Includes general research topics related to the natural space sciences. For specific topics in space sciences see *categories 89 through 93*.

**20040201039** NASA, Washington, DC, USA
**The Plasma Universe**
[2004]; In English; 1 hr., 59 min. playing time, in color, with sound; No Copyright; Avail: CASI: V04, Videotape-VHS

Dr. France Cordova, NASA’s Chief Scientist, chaired this, the eighth seminar in the Administrator’s Seminar Series. She introduced the NASA Administrator, Daniel S. Goldin, who, in turn, introduced the subject of plasma. Plasma, an ionized gas, is a function of temperature and density. We ve learned that, at Jupiter, the radiation is dense. But, Goldin asked, what else do we know? Dr. Cordova then introduced Dr. James Van Allen, for whom the Van Allen radiation belt was named. Dr. Van Allen, a member of the University of Iowa faculty, discussed the growing interest in practical applications of space physics, including radiation fields and particles, plasmas and ionospheres. He listed a hierarchy of magnetic fields, beginning at the top, as pulsars, the Sun, planets, interplanetary medium, and interstellar medium. He pointed out that we have investigated eight of the nine known planets,. He listed three basic energy sources as 1) kinetic energy from flowing plasma such as constitutional solar wind or interstellar wind; 2) rotational energy of the planet, and 3) orbital energy of satellites. He believes there are seven sources of energetic particles and five potential places where particles may go. The next speaker, Dr. Ian Axford of New Zealand, has been associated with the Max Planck Institut fuer Aeronomie and plasma physics. He has studied solar and galactic winds and clusters of galaxies of which there are several thousand. He believes that the solar wind temperature is in the millions of degrees. The final speaker was Dr. Roger Blanford of the California Institute of Technology. He classified extreme plasmas as lab plasmas and cosmic plasmas. Cosmic plasmas are from supernovae remnants. These have supplied us with heavy elements and may come via a shock front of 10(sup 15) electron volts. To understand the physics of plasma, one must learn about x-rays, the maximum energy of acceleration by supernova remnants, particle acceleration and composition of cosmic rays, maximum acceleration, and how fast protons are heated by ions. He asked questions about where high energy cosmic rays are made, what accelerates electrons, radiates gamma rays, makes electronpositron plasma, and finally noted that pulsars are good time keepers, but we need a better understanding of their mechanism and of plasmas, both cosmic and ground-based. In the discussion period, Goldin asked if NASA should put up an x-ray interferometer. The answer was no;

gamma rays are of greater interest just now. Goldin also asked what the assembled scientists would like to see for a future mission? They expressed an interest in learning more about the origin of galaxies, cosmic rays, solar systems, planets, the existence of life ‘out there’, gamma ray sources, the nature of gamma ray bursts, and the flow of gases around black holes. The discussion concluded with a suggestion that NASA should communicate to the general public more information regarding actual technological trials and tribulations involved in getting an experiment to work. The speakers thought that this would help non-scientists to better appreciate what it is that NASA does in connection with the benefits that are achieved.
Derived from text
*Plasma Physics; Ionized Gases; Temperature Dependence; Density (Mass/Volume); Radiation Belts; Pulsars*

## 89
## ASTRONOMY

Includes observations of celestial bodies; astronomical instruments and techniques; radio, gamma-ray, x-ray, ultraviolet, and infrared astronomy; and astrometry.

**19940010949** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**NASA’s Hubble Space Telescope: The challenge and complexity of operations**
Jun 1, 1989; In English
Report No(s): GSFC-T-24; NASA-TM-109577; NONP-NASA-VT-93-190375; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS

This video presentation touches on the truly fast complexity of the first of NASA’s great observatories, the Hubble Space Telescope.
CASI
*Hubble Space Telescope; NASA Space Programs*

**19950004133** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**BBXRT clip: The Broad Band X-ray Telescope**
May 1, 1990; In English
Report No(s): GSFC-NL-13; NASA-TM-109875; NONP-NASA-VT-94-23137; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS

This video recording explains the science mission of the Broad Band X ray Telescope on board the Space Shuttle Columbia, December 1990. This tape was produced before launch.
GSFC
*Broadband; Space Shuttle Missions; X Ray Telescopes*

**20010021608** Space Telescope Science Inst., Baltimore, MD USA
**Hubble Spies Huge Cluster of Stars Formed by Ancient Encounter**
Mar. 01, 2001; In English; Videotape: 6 min. 20 sec. playing time, in color, with sound
Report No(s): NONP-NASA-VT-2001030025; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This release marks the beginning of a new outlet for the Space Telescope Science Institute, the ‘Hubble Minute’. Hubble Minute is an edited vignette suitable for use in newscasts, magazine shows, and as an interstitial program. The Minute explains how scientists are determining when M82 and M81 collided, and how dating the crash may result in a better understanding of how our own galaxy formed.
Author
*Crashes; Galaxies; Star Clusters; Time Measurement*

**20010036664** Space Telescope Science Inst., Baltimore, MD USA
**Farthest Supernova Bolsters Proof for a Mysterious Form of Energy Pervading the Universe**
[2001]; In English; Videotape: 16 min. 42 sec. playing time, in color, with sound
Report No(s): NONP-NASA-VT-2001047824; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS

Computerized animations show the following: (1) the acceleration and deceleration of the universe; (2) an image subtraction of the 1995 and 1997 images of the Hubble Deep Field to reveal a supernova in the 1997 image; (3) a pie-chart

of the mass composition of the universe; (4) the universe's expansion after the Big Bang; (5) a supernova detonating; and (6) the lightbulb test (to determine distance by comparing light intensity). Zoom shots show the Hubble Deep Field (from ground-based observations to the Hubble Space Telescope (HST) image) and the Hubble Deep Field with a supernova (from an artist's conception animation to a ground-based view). Dr. Ron Gilliland explains that he looked for a supernova in the Hubble Deep Field and how supernova are useful as standard candles. Dr. Adam Riess describes how astronomers used supernovae to discover that the universe is expanding and why it might be expanding.
CASI
*Luminous Intensity; Supernovae; Expansion; Cosmology*

**20010059304** NASA Goddard Space Flight Center, Greenbelt, MD USA
**Microlensing: Globular Cluster M22 Video File**
[2001]; In English; Videotape: 6 min. 55 sec. playing time, in color, with sound
Report No(s): NONP-NASA-VT-2001092796; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

A computerized animation begins outside a globular cluster similar to M22, with the center of the Milky Way in the distance. The camera flies through the center of the cluster and rests with a dark object in the distance. This object, a suspected brown star, passes in front of a star in the galactic bulge, bending its light gravitationally. This bending, or lensing, causes a momentary brightening of the background star. Another sequence begins with a ground-based view of the center of our galaxy in the upper right. We zoom in to reveal a ground-based view of the region surrounding the cluster and continue zooming to reveal the Hubble Space Telescope view of M22. In an interview with Kailash Sahu, Astronomer, he describes the Hubble results, explains why the objects in M22 can't be planets, and explains Hubble's role in the observations of M22. The last image was taken with Hubble's Wide Field and Planetary Camera 2 and pierces the heart of a globular cluster with its needle-sharp vision and uncovers tantalizing clues to what could potentially be a strange and unexpected population of wandering, planet-sized objects.
Author
*Globular Clusters; Gravitational Lenses; Milky Way Galaxy*

**20010067427** Space Telescope Science Inst., Baltimore, MD USA
**Hubble's Panoramic Portrait of a Vast Star-Forming Region**
Jul. 26, 2001; In English; Videotape: 4 min. 13 sec. playing time, in color, with sound
Report No(s): NONP-NASA-VT-2001110130; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

A computerized animation zooms into the 30 Doradus region. Dr. Nolan Walborn explains how the Hubble images of 30 Doradus and its central cluster are changing our understanding of similar star forming regions and what is happening in the gas pillars.
Derived from text
*Magellanic Clouds; Nebulae*

## 90
## ASTROPHYSICS

Includes cosmology; celestial mechanics; space plasmas; and interstellar and interplanetary gases and dust.

**20010019528** Space Telescope Science Inst., USA
**Black Holes Shed Light on Galaxy Formation**
[2000]; In English; Videotape: 13 min. 10 sec. playing time, in color, with sound
Report No(s): NONP-NASA-VT-2001026551; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This videotape is comprised of several segments of animations on black holes and galaxy formation, and several segments of an interview with Dr. John Kormendy. The animation segments are: (1) a super massive black hole, (2) Centarus A active black hole found in a collision, (3) galaxy NGC-4261 (active black hole and jet model), (4) galaxy M-32 (orbits of stars are effected by the gravity of the black hole), (5) galaxy M-37 (motion of stars increases as mass of black hole increases), (6) Birth of active galactic nuclei, (7) the collision of two galaxy leads to merger of the black holes, (8) Centarus A and simulation of the collision of 2 galaxies. There are also several segments of an interview with John Kormendy. In these segments he discusses the two most important aspects of his recent black hole work: (1) the correlations between galaxies speed and the mass of the black holes, and (2) the existence of black holes and galactic formation. He also discusses the importance of the

Hubble Space Telescope and the Space Telescope Imaging Spectrograph to the study of black holes. He also shows the methodology of processing images from the spectrograph in his office.
CASI
*Hubble Space Telescope; Black Holes (Astronomy); Collisions; Galaxies; Simulation; Galactic Structure*

**20010019529** Space Telescope Science Inst., USA
**Hubble Identifies Source of Ultraviolet Light in an Old Galaxy**
[2000]; In English; Videotape : 3 min. 47 sec. playing time, in color, no sound
Report No(s): NONP-NASA-VT-2001026548; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This videotape is comprised of four segments: (1) a Video zoom in on galaxy M32 using ground images, (2) Hubble images of galaxy M32, (3) Ground base color image of galaxies M31 and M32, and (4) Black and white ground based images of galaxy M32.
Author
*Ultraviolet Radiation; Andromeda Galaxy; Elliptical Galaxies*

**20010019695** Space Telescope Science Inst., Baltimore, MD USA
**Orion Nebula Movie**
Feb. 01, 2001; In English; Videotape: 5 min. 11 sec. playing time, in color, no sound
Report No(s): NONP-NASA-VT-2001026555; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

Footage shows the following simulations derived from Hubble Space Telescope images: (1) the tiling of the Orion mosaic; (2) Orion mosaic fly-through; and (3) a close-up of the Orion mosaic.
CASI
*Orion Nebula; Simulation*

**20010019696** Space Telescope Science Inst., Baltimore, MD USA
**The Secret Lives of Galaxies**
Feb. 01, 2001; In English; Videotape: 3 min. 53 sec. playing time, in color, no sound
Report No(s): NONP-NASA-VT-2001026546; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

The ground-based image in visible light locates the hub imaged with the Hubble Space Telescope. This barred galaxy feeds material into its hub, igniting star birth. The Hubble NICMOS instrument penetrates beneath the dust to reveal clusters of young stars. Footage shows ground-based, WFPC2, and NICMOS images of NGS 1365. An animation of a large spiral galaxy zooms from the edge to the galactic bulge.
Author (revised)
*Barred Galaxies; Galactic Bulge; Spiral Galaxies; Star Clusters*

**20010019697** Space Telescope Science Inst., Baltimore, MD USA
**Giant Star Clusters Near Galactic Core**
Feb. 01, 2001; In English; Videotape: 4 min. 11 sec. playing time, in color, with sound
Report No(s): NONP-NASA-VT-2001026545; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

A video sequence of still images goes deep into the Milky Way galaxy to the Arches Cluster. Hubble, penetrating through dust and clouds, peers into the core where two giant clusters shine more brightly than any other clusters in the galaxy. Footage shows the following still images: (1) wide view of Sagittarius constellation; (2) the Palomar Observatory's 2 micron all-sky survey; and (3) an image of the Arches Cluster taken with the Hubble Space Telescope NICMOS instrument. Dr. Don Figer of the Space Telescope Science Institute discusses the significance of the observations and relates his first reaction to the images.
Author (revised)
*Galactic Nuclei; Star Clusters; Giant Stars; Sagittarius Constellation*

**20010019896** Space Telescope Science Inst., USA
**Astronomers Ponder Lack of Planets in Globular Cluster**
[2000]; In English; Videotape: 7 min. 58 sec. playing time, in color, with sound
Report No(s): NONP-NASA-VT-2001026553; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This videotape has seven segments, discussing and showing the evidence for the proposition that the galactic clusters do not have many planets. Specifically the segments show: (1) Dr. Ron Gilliland discussing the process of looking for 'Hot Jupiters' (i.e., planets about the size of Jupiter, which are hotter than Jupiter) in the globular clusters, (2) a zoom into 47 Tucanae globular cluster, (3) an animation of a planet passing between the host star and the earth with a brightness graph, (4) the same animation as before without the graph, (5) Ron Gilliland of the Space Telescope Science Institute (STScI) discussing possible interpretations of his findings in the 47 Tucanae globular cluster, (6) Ron Gilliland examining the images of 47 Tucanae, and (7) images of 47 Tucanae watching for variations in brightness.
CASI
*Galactic Clusters; Star Clusters; Extrasolar Planets; Gas Giant Planets*

**20010036751** Space Telescope Science Inst., Baltimore, MD USA
**Quasar Host Galaxies/Neptune Rotation/Galaxy Building Blocks/Hubble Deep Field/Saturn Storm**
[2001]; In English; Videotape: 13 min. 57 sec. playing time, in color, no sound
Report No(s): NONP-NASA-VT-2001026556; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

Computerized animations simulate a quasar erupting in the core of a normal spiral galaxy, the collision of two interacting galaxies, and the evolution of the universe. Hubble Space Telescope (HST) images show six quasars' host galaxies (including spirals, ellipticals, and colliding galaxies) and six clumps of galaxies approximately 11 billion light years away. A false color time lapse movie of Neptune displays the planet's 16-hour rotation, and the evolution of a storm on Saturn is seen though a video of the planet's rotation. A zoom sequence starts with a ground-based image of the constellation Ursa major and ends with the Hubble Deep Field through progressively narrower and deeper views.
CASI
*Computerized Simulation; Galactic Evolution; Galaxies; Interacting Galaxies; Neptune (Planet); Quasars; Saturn (Planet)*

**20010036752** Space Telescope Science Inst., Baltimore, MD USA
**Spinning Stardust into Planets**
[2001]; In English; Videotape: 6 min. 19 sec. playing time, in color, with sound
Report No(s): NONP-NASA-VT-2001026554; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

A computerized animation simulates the formation of a stellar disk and planets. Ten images from the Hubble Space Telescope (HST) show young stellar disks (taken with the Near-Infrared Camera Multi-Object Spectrometer (NICMOS)) and stellar disks around young stars (taken with the Wide-Field Planetary Camera 2 (WFPC2)). Dr. Deborah Padgett describes what astronomers see in the images of young stellar disks and Dr. Karl Stapelfeldt explains HST's role in helping astronomers to examine young stars in order to understand how solar systems like our own may form.
CASI
*Planetary Evolution; Planets; Stellar Models; Computerized Simulation; Protoplanetary Disks*

**20010036753** Space Telescope Science Inst., Baltimore, MD USA
**The Trifid Nebula: Stellar Sibling Rivalry**
[2001]; In English; Videotape: 3 min. 55 sec. playing time, in color, no sound
Report No(s): NONP-NASA-VT-2001026552; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

A zoom into the Trifid Nebula starts with ground-based observations and ends with a Hubble Space Telescope (HST) image. Another HST image shows star formation in the nebula and the video concludes with a ground-based image of the Trifid Nebula.
CASI
*Nebulae; Star Formation*

**20010067455** Space Telescope Science Inst., Baltimore, MD USA
**Galaxy Group Stephan's Quintet Video File HubbleMinute: Battle Royale in Stephan's Quintet**
Jul. 19, 2001; In English; Videotape: 12 min. 40 sec. playing time, in color, with sound
Report No(s): NONP-NASA-VT-2001107899; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

The Hubble Space Telescope's closeup view of Stephan's Quintet, a group of five galaxies, reveals a string of brighter star clusters that separate like a diamond necklace. Astronomers studying the compact galaxy group Stephan's Quintet have seen creative destruction in the many collisions taking place among its galaxies. This HubbleMinute discusses what astronomers are learning and hope to learn from exploring the quintet.
Derived from text
*Galactic Clusters; Galaxies; Collisions*

## 91
## LUNAR AND PLANETARY SCIENCE AND EXPLORATION

Includes planetology; selenology; meteorites; comets; and manned and unmanned planetary and lunar flights. For spacecraft design or space stations see *18 Spacecraft Design, Testing and Performance*.

**20010021609** Space Telescope Science Inst., Baltimore, MD USA
**Worlds Smaller than Saturn**
Mar. 01, 2001; In English; Videotape: 64 min. 7 sec. playing time, in color, with sound
Report No(s): NONP-NASA-VT-2001030026; No Copyright; Avail: CASI: B04, Videotape-Beta: V04, Videotape-VHS

Computerized animations show the following: (1) an artist's conception of a Saturn-like extrasolar planet; (2) star and planet motion; and (3) young stellar disk and planet formation. Footage shows the outside of the Mauna Kea Observatories in Hawaii and Geoff Marcy and Paul Butler inside while they are processing information. Then a press conference,'Worlds Smaller than Saturn', is seen. Anne Kinney, Origins Science Director, NASA Headquarters, introduces Geoff Marcy, Paul Butler, Alan Boss, and Heidi Hammel. They discuss the discovery of the two new Saturn-sized extrasolar planets that are orbiting the stars HD46375 and 79 Seti, giving details on the search technique and size distribution. They then answer questions from the press.
CASI
*Extrasolar Planets; Planetary Evolution*

**20040052834** NASA Goddard Space Flight Center, Greenbelt, MD, USA
**Plentiful Water Detected in Mars Northern Hemisphere**
June 26, 2003; In English; 6 min., 56 sec. playing time, in color, with sound
Report No(s): G03-043; No Copyright; Avail: CASI: V01, Videotape-VHS: B01, Videotape-Beta

NASA's Mars Odyssey Spacecraft is revealing new details about a changeable array of frozen layers on Northern Mars. Odyssey's neutron and gamma-ray sensors have tracked seasonal changes as layers of 'dry ice' carbon dioxide frost or snow accumulated during northern Mars' winter and then dissipate in the spring to expose a permafrost soil layer rich in water ice. The research is presented in a paper in the June 27, 2003 issue of the Journal Science. This video contains a slide show interspersed with computer generated graphics of seasonal ice distribution and thickness on Mars. The graphics utilize Viking and Mars Orbiter Laser Altimeter (MOLA) data as well as Odyssey data.
Author (revised)
*2001 Mars Odyssey; Mars Surface; Northern Hemisphere; Ice*

**20080015990** NASA Marshall Space Flight Center, Huntsville, AL, USA
**Is There Water on the Moon? NASA's LCROSS Mission [Supplemental Video]**
November 09, 2007; In English; See also 20080015767; Video is on CD-ROM, Sound, Color, 4.15 min.; No Copyright; Avail: CASI: C01, CD-ROM

Presents a supplemental video supporting the original conference presentation under the same title. The conference presentation discussed NASA's preparation for its return to the moon with the Lunar CRater Observation and Sensing Satellite

(LCROSS) mission which will robotically seek to determine the presence of water ice at the Moon’s South Pole. This secondary payload spacecraft will travel with the Lunar Reconnaissance Orbiter (LRO) satellite to the Moon on the same Atlas-V 401 Centaur rocket launched from Cape Canaveral Air Force Station, Florida. The 1000kg Secondary Payload budget is efficiently used to provide a highly modular and reconfigurable LCROSS Spacecraft with extensive heritage to accurately guide the expended Centaur into the crater. Upon separation, LCROSS flies through the impact plume, telemetering real-time images and characterizing water ice in the plume with infrared cameras and spectrometers. LCROSS then becomes a 700kg impactor itself, to provide a second opportunity to study the nature of the Lunar Regolith. LCROSS provides a critical ground-truth for Lunar Prospector and LRO neutron and radar maps, making it possible to assess the total lunar water inventory. The video contains an animated simulation of the Centaur launch, LRO separation, LRO high resolution lunar survey, LCROSS mission elements and LCROSS impactor separation and impact observations.
CASI
*Lunar Exploration; Lunar Craters; Mission Planning; Moon; Extraterrestrial Water; Lunar Satellites*

## 92
## SOLAR PHYSICS

Includes solar activity, solar flares, solar radiation and sunspots. For related information see *93 Space Radiation*.

**20010036754** Space Telescope Science Inst., Baltimore, MD USA
**Final Blaze of Glory**
[2001]; In English; Videotape: 14 min. 57 sec. playing time, in color, with sound
Report No(s): NONP-NASA-VT-2001026549; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video gives an overview of planetary nebulae through a computerized animation, images from the Hubble Space Telescope (HST), and interviews with Space Telescope Science Institute Theorist Dr. Mario Livio. A computerized animation simulates a giant star as it swallows its smaller companion. HST images display various planetary nebulae, such as M2-9 Twinjet Nebula, NGC 3568, NGC 3918, NGC 5307, NGC 6826, NGC 7009, and Hubble 5. An artists conception shows what our solar system might look like in a billion years when the Sun has burned out and cast off its outer layers in a shell of glowing gas. Dr. Livio describes the shapes of the planetary nebulae, gives three reasons to study planetary nebulae, and what the observations made by HST have meant to him. A succession of 17 HST images of planetary nebulae are accompanied by music by John Serrie.
CASI
*Giant Stars; Planetary Nebulae*

## 99
## GENERAL

Includes aeronautical, astronautical, and space science related histories, biographies, and pertinent reports too broad for categorization; histories or broad overviews of NASA programs such as Apollo, Gemini, and Mercury spacecraft, Earth Resources Technology Satellite (ERTS), and Skylab; NASA appropriations hearings.

**19940009160** NASA Dryden Flight Research Facility, Edwards, CA, USA
**Flight operations highlights, tapes 1 and 2**
Apr 1, 1990; In English
Report No(s): NASA-TM-109293; NONP-NASA-VT-93-185308; No Copyright; Avail: CASI: B04, Videotape-Beta: V04, Videotape-VHS

Historical film footage of the X-series aircraft (including Yeager’s X-1 flight), lifting bodies, and early Apollo landing tests is presented.
Author (revised)
*Flight Operations; Histories*

**19950004300** NASA Dryden Flight Research Center, Edwards, CA, USA
**Dryden year in review: 1992**
Jan 1, 1993; In English
Report No(s): NASA-TM-104285; NONP-NASA-VT-94-23632; No Copyright; Avail: CASI: B01, Videotape-Beta: V01, Videotape-VHS

This video reviews the research work done at Dryden for the year 1992.

DFRC
*General Overviews; NASA Programs; Research Facilities*

**19950004301** NASA Dryden Flight Research Center, Edwards, CA, USA
**NACA/NASA history at Dryden, part 1 and 2**
May 4, 1990; In English
Report No(s): NASA-TM-104287; NONP-NASA-VT-94-23633; No Copyright; Avail: CASI: B03, Videotape-Beta: V03, Videotape-VHS

Two video tapes of raw material show examples of research activity at the center from the 1950's to the 1980's.

DFRC
*Histories; NASA Programs; Research Facilities*

**19950004338** NASA Dryden Flight Research Center, Edwards, CA, USA
**Dryden summer 1994 update**
Jul 8, 1994; In English
Report No(s): NASA-TM-104305; NONP-NASA-VT-94-23650; No Copyright; Avail: CASI: B02, Videotape-Beta: V02, Videotape-VHS

This video presents a complete, technically detailed report on all Dryden projects, achievements, and employee activities for 1994.

DFRC
*Aeronautical Engineering; Research and Development; Research Projects*

**20070031215** NASA Dryden Flight Research Center, Edwards, CA, USA
**Six Decades of Flight Research: Dryden Flight Research Center, 1946 - 2006 [DVD]**
Fisher, David F.; Parcel, Steve; May 2007; 5 pp.; In English
Report No(s): NASA/TM-2007-214617; No Copyright; Avail: CASI: C01, DVD

This DVD contains an introduction by Center Director Kevin Peterson, two videos on the history of NASA Dryden Flight Research Center and a bibliography of NASA Dryden Flight Research Center publications from 1946 through 2006. The NASA Dryden 60th Anniversary Summary Documentary video is narrated by Michael Dorn and give a brief history of Dryden. The Six Decades of Flight Research at NASA Dryden lasts approximately 75 minutes and is broken up in six decades: 1. The Early X-Plane Era; 2. The X-15 Era; 3. The Lifting Body Era; 4. The Space Shuttle Era; 5. The High Alpha and Thrust Vectoring Era; and 6. The technology Demonstration Era. The bibliography provides citations for NASA Technical Reports and Conference Papers, Tech Briefs, Contractor Reports, UCLA Flight Systems Research Center publications and Dryden videos. Finally, a link is provided to the NASA Dryden Gallery that features video clips and photos of the many unique aircraft flown at NASA Dryden and its predecessor organizations.

Author
*Video Tapes; Histories; NASA Space Programs; Flight Tests; Aircraft Design; Research Vehicles*

# Subject Term Index

# Title Index

# Report Documentation Page

| 1. Report No. | 2. Government Accession No. | 3. Recipient's Catalog No. |
|---|---|---|
| NASA/SP—2008-7109/SUPPL18 | | |

| | |
|---|---|
| 4. Title and Subtitle<br>NASA Video Catalog | 5. Report Date<br>October 2008<br>6. Performing Organization Code |
| 7. Author(s) | 8. Performing Organization Report No.<br>10. Work Unit No. |
| 9. Performing Organization Name and Address<br>NASA Scientific and Technical Information Program Office | 11. Contract or Grant No. |
| 12. Sponsoring Agency Name and Address<br>National Aeronautics and Space Administration<br>Langley Research Center<br>Hampton, VA 23681 | 13. Type of Report and Period Covered<br>Special Publication<br>14. Sponsoring Agency Code |

15. Supplementary Notes

16. Abstract

This report lists video and motion picture productions from the NASA STI database.

| 17. Key Words (Suggested by Author(s)) | 18. Distribution Statement |
|---|---|
| Bibliographies<br>Videotape | Unclassified – Unlimited<br>Subject Category – 99 |

| 19. Security Classif. (of this report) | 20. Security Classif. (of this page) | 21. No. of Pages | 22. Price |
|---|---|---|---|
| Unclassified | Unclassified | | |

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