

University of Houston Clear Lake

Archives and Special Collections

HSF-58 Paul F. Horsman Papers

[Human Space Flight Collection]

Collection Number: HSF-58

Title: Paul F. Horsman Papers

Dates: 1959-1996, undated (with gaps)

Creator: Paul F. Horsman; National Aeronautics and Space Administration

Abstract

The Paul F. Horsman Papers is composed of meeting notes, notebooks, calendars, memos, engineering drawings, engineering calculations and notes, research information, memos, design plans, planning records, Space Shuttle crew compartment configuration drawing booklets, published reports, booklets, published presentations, published conference proceedings, contractor reports and manuals, NASA publications, NASA handbooks and manuals, NASA strategic plans, telephone directories, photographs, and miscellaneous materials, created and used by NASA Johnson Space Center engineer Paul F. Horsman. Horsman worked for NASA as one of the original 40 engineers and scientists with NASA's Space Force Task Force in Langley, Virginia. He worked from 1962 to 1997 at NASA Johnson Space Center Houston, Texas.

Horsman worked in various divisions and offices at NASA for the Mercury and Apollo programs from 1959 to the early 1970s, before turning to work on Space Shuttle orbiter engineering work. The main two departments in which he worked were the Electro-mechanical Systems Section of the Guidance and Control Division of the Engineering Directorate, and Space Shuttle Integration and Operations Office. Some of the most unique materials in the collection include Horsman's personal meeting and engineering notebooks; orbiter crew compartment configuration drawings; design records and research on addressing addressed the issues of stabilization of magnetic torquers, which were used on the Apollo missions and in early design work for the Space Shuttle; and Horsman's engineering drawings of the Mercury capsule design, and the designs for the Mercury flight simulator created between September 1959 and April 1960.

Extent: approximately 4.50 linear feet

Language(s): English

Repository

University of Houston-Clear Lake Archives and Special Collections, Alfred R. Neumann Library, 2700 Bay Area Blvd., Houston, TX 77058-1002

Restrictions on Access: There are no restrictions on accessing this collection.

Restrictions on Use: There are no restrictions on using this collection.

Preferred Citation

[Item name or title], [Box Numbers], [Folder Numbers], Paul F. Horsman Papers, HSF-58, University of Houston-Clear Lake Archives and Special Collections, Alfred R. Neumann Library, 2700 Bay Area Blvd., Houston, TX 77058-1002

Acquisition

The collection was deposited with the University of Houston-Clear Lake Archives and Special Collections by Deborah Horsman Lively, daughter of Paul Horsman, in March 2022. The donation was completed in April 2022.

Separated Material

The oversized engineering drawings of the Mercury capsule and flight simulator were removed from the main collection, and stored in an oversized flat archival folder numbered as "Oversized Folder 1." This folder was relocated to an oversized box which contains oversized materials under 11" x 17" for the Human Space Flight Collection collections numbered HSF-50 to HSF-80. The box is marked " Human Space Flight Collection Oversized Materials," and has the collection numbers listed for the materials it contains.

Related Material

Paul F. Horsman, interview, Houston, February 12, 1964 (period interview for NASA, cited in internal reports but part of an unspecified interview collection)

Processing Information

The collection was originally compiled into boxes by Horsman's daughter, from materials he had filed in cabinets and boxes in his home office. When the UHCL Archives received the collection, the materials that were originally grouped in folders or sets by Horsman, were retained in that order within the archival folders to maintain their informational connection. Some original sticky notes with information and acidic folder covers were photocopied for preservation, and stored with the original records to preserve the descriptive information. Many sticky notes used by Horsman on his publications, memos, and design records, were left in tack; they will likely fall off over time due to the lack of long-term strength of the stick notes' adhesive.

A large number of documents were copied or originally generated on 1960s and 1970s Thermo-fax paper, which has a clay surface that turns darker brown with time and exposure to light. Many of these documents were already so dark brown that photocopying the documents was difficult, and some definition of engineering drawings or notes were lost on the photocopies. The

original documents were removed from the collection in keeping with UHCL Archives' processing standards, to preserve the rest of the materials in the collection. Duplicate materials, non-historic materials like JSC human resource memos, and various publications for which numerous copies exist in other repositories, were removed from the collection in keeping with UHCL Archives' processing standards.

The photographs in the collection have been individually stored in acid-free, archival plastic sleeves to allow for researchers to handle the original images without causing damage to the images' surface, and to improve preservation during long-term storage. The photographs have been numbered with HB No. 2 pencil on the back, according to the collection number, the box and folder number, and an individual image number. For example, the number "HSF-58.B1.F17.1" should be interpreted as "Human Space Flight Collection 58 collection, Box 1, Folder 17, Photograph 1." The identifications of these images have been created in the finding aid where descriptive information was available, but not written on the photograph itself.

Several oversized engineering drawings were removed from their original office file folders, and are being stored separately in an oversized acid-free archival folder. See "Separate Material" note for more information on storage location of the drawings.

Processed by: Matthew M. Peek, July-August 2022

Arrangement

The collection is arranged into series based on the purpose and subjects of the materials, organized in folders without strict chronological order within each folder. The collection is organized in the following series: Series I: Personal Work Materials; Series II: Mercury and Apollo Projects Materials; Series III: Space Shuttle Program Materials; Series IV: Horsman's Spacecraft Design and Research Records; Series V: NASA and Miscellaneous Publications and Reports; Series VI: Johnson Space Center Memos; and Series VII: Miscellaneous Materials.

Biographical Note

Paul Francis Horsman was born on January 18, 1933, in Washington, DC, to Harold M. and Marie Force Horsman. Paul was the fifth of their six children in a family that lived in the Washington, D.C., and Maryland area until into the 1940s. The, the Horsman family moved to Eau Gallie section of Melbourne, Florida, in the 1940s.

Little is known by the UHLC Archives regarding his parents' background or work. The family reports that Horsman's father Harold Miles Horsman joined the U.S. Navy as an apprentice seaman in July 1917 during World War I; Harold served aboard the USS *Terry* (DD-25), a Paulding-class destroyer, as a machinist mate through June 1919. During World War II, Harold Horsman is reported to have served as a Chief Radio Electrician at the U.S. Naval Air Station in Kodiak, Alaska, in 1942. He relocated to the Banana River Naval Air Station near Eau Gallie, Florida, in the mid-1940s.

As a result of Harold Horsman's WWII service, the Horsman family ended up residing in Florida. Paul Horsman would attend Melbourne High School in Florida. He went on to enlist in the U.S. Navy in late 1950 during the Korean War. Horsman served as a communication technician on the island of Guam. He would serve until 1953, when he was discharged from the Navy in Washington, D.C.

After the Korean War, Paul Horsman attended Woodward Prep School in Washington, D.C., to finish his education. He would marry Delma Tindell in 1954. In 1955, the Horsmans moved to Gainesville, Florida, and Paul attended the University of Florida to study mechanical engineering. He was at the top of his class in the engineering program, when he received an offer letter in November 1958 for a position with the nascent National Aeronautics and Space Administration. Horsman accepted the position on March 27, 1959, and went on to graduate with honors from the mechanical engineering program.

Paul Horsman started working at NASA's facilities at Langley Field in Hampton, Virginia, on June 17, 1959 as part of the Space Task Group. Horsman was an early member of the Flight Controls Section, Dynamics Branch, in the Engineering and Contract Administration Division at Langley Field. He would remain working at Langley until 1962, when the Horsman family moved to the Houston, Texas, in January 1962 for Paul to work in NASA's manned spacecraft program. As of October 1962, Horsman was working in the Manned Spacecraft Center Control and Guidance Systems Section of the Guidance and Control Division of the Engineering Directorate under Maxime A. Faget.

With Guidance and Control, Horsman was assigned between 1962 and October 1963 to review for the Project Mercury the work completed by McDonnell Aircraft Company, to see if they were accurately reporting on innovations, improvements, inventions, or other developments made during their Project Mercury construction of the Mercury capsule. In 1963, Horsman went to work in the newly-constructed Manned Spacecraft Center facility. He would work mainly from 1960 to 1964 on stability issues with the Mercury spacecraft. The Horsman family moved into their new home in Nassau Bay, Texas, in 1964, near the new Center.

On January 3, 1964, Paul Horsman was assigned to be the acting head of the Electro-mechanical Systems Section of the Guidance and Control Division of the Engineering Directorate at MSC. He would serve from 1964 through around 1969 or 1970 in the Electro-mechanical Systems Section in the Control Systems Development Branch of GCD. Much of his work during the Mercury and Apollo program periods involved the development of stabilization, magnetic torquers for attitude control, and other electromechanical systems involved with navigation and spacecraft control. Horsman was involved in planning and development for systems for Apollo 11, including making calculations for rendezvous and docking of the Lunar Module with the Command and Service Module.

As NASA began thinking of developing the new reusable orbiter that would become the Space Shuttle, Horsman and his fellow engineers were meeting just after the landing of Apollo 11 to begin planning the design and operations of the orbiter. From 1969 through the completion by North American Rockwell (later Rockwell International) of the test orbiter *Enterprise* in 1976, Paul Horsman would be involved in the planning for the orbiter project data configuration, and

worked to plan the cylinder stowage for the new Space Shuttle. His exact job titles during this period are unclear from his records, as department names and assignments changed for Apollo Program staff being moved into the Space Shuttle Programs' new departments.

Beginning around 1977 or 1978, Paul Horsman's work at Johnson Space Center tended towards engineering components for the Space Shuttle orbiters. This work involved design the look, layout, size, and coloring for controls and displays panels inside of the orbiter, mainly in the crew compartment. He also worked on designing the Standard Switch Panel (SSP) layout and nomenclature for the Space Shuttle, as well as contributing to establishing design criteria for all shuttles starting with the first orbiter, STS-1. The Standard Switch Panel is a service on the orbiter that can be used to provide additional real-time onboard control through hardwire commands. By 1979, Horsman was working in the Crew Station Branch of the Spacecraft Design Division at JSC, and continued working on the designing of SSPs into the early 1980s.

By 1983, Horsman was working in the Crew Station Integration Section of the Crew Station Branch in the Experiments and Operations Support Division at JSC. He worked on developing the mid-deck payload plug-ins for the crew compartment on the Space Shuttle around this time through the 1980s. From the mid-1980s through at least 1994, Horsman worked as an orbiter crew compartment flight engineer, among other work responsibilities, continuing to design SSP nomenclature placard kits and SSP marking designs. He also worked with testing in the Weightless Environment Training Facility (WETF) in Building 29 at JSC around 1987. By 1989, Horsman was working in the Space Shuttle Integration and Operations Office at JSC.

Between 1991 and 1992, Horsman was part of the test team for the ACRV water testing. The water-landing Assured Crew Return Vehicle (ACRV) was a postlanding support system in the event of an accident or illness. From July 1992 to July 1993, he worked on the development of the European Retrieval Carrier. Horsman would also serve on the Development and Integration Team. Paul Horsman retired from NASA in 1997, at which time he was working in the Crew Station Branch of the Flight Crew Support Division at Johnson Space Center.

Beginning in the 1970s, he found a lot of satisfaction in physical fitness, and began running in ran marathons and triathlons—including for Johnson Space Center's own long-distance running group. Horsman lived the rest of his life Nassau Bay, Texas. Paul F. Horsman died on July 19, 2021, in League City, Texas.

Scope and Content

The collection is composed of meeting notes, notebooks, calendars, memos, engineering drawings, engineering calculations and notes, research information, memos, design plans, planning records, Space Shuttle crew compartment configuration drawing booklets, published reports, booklets, published presentations, published conference proceedings, contractor reports and manuals, NASA publications, NASA handbooks and manuals, NASA strategic plans, telephone directories, photographs, and miscellaneous materials, created and used by NASA Johnson Space Center engineer Paul F. Horsman. Horsman worked for NASA as one of the original 40 engineers and scientists with NASA's Space Force Task Force in Langley, Virginia. He worked from 1962 to 1997 at NASA Johnson Space Center Houston, Texas.

Horsman worked in various divisions and offices at NASA for the Mercury and Apollo programs from 1959 to the early 1970s, before turning to work on Space Shuttle orbiter engineering work. The main two departments in which he worked were the Electro-mechanical Systems Section of the Guidance and Control Division of the Engineering Directorate, and Space Shuttle Integration and Operations Office. Some of the most unique materials in the collection include Horsman's personal meeting and engineering notebooks; orbiter crew compartment configuration drawings; design records and research on addressing addressed the issues of stabilization of magnetic torquers, which were used on the Apollo missions and in early design work for the Space Shuttle; and Horsman's engineering drawings of the Mercury capsule design, and the designs for the Mercury flight simulator created between September 1959 and April 1960.

The collection is organized into seven series based on the purpose and programs represented by the materials: Series I: Personal Work Materials; Series II: Mercury and Apollo Projects Materials; Series III: Space Shuttle Program Materials; Series IV: Horsman's Spacecraft Design and Research Records; Series V: NASA and Miscellaneous Publications and Reports; Series VI: Johnson Space Center Memos; and Series VII: Miscellaneous Materials.

Subject Terms

Personal/Family Name

Horsman, Paul F. (Paul Francis), 1933-2021

Corporate Names

Lyndon B. Johnson Space Center
Lyndon B. Johnson Space Center. Office of Public Affairs
McDonnell Aircraft Company
Rockwell International. Space Division
United States. National Aeronautics and Space Administration

Geographic Name

Houston (Tex.)
Nassau Bay (Tex.)

Topical Term

Apollo 10 (Spacecraft)
Apollo 11 (Spacecraft)
Apollo 12 (Spacecraft)
Apollo 13 (Spacecraft)
Manned space flight--History
Project Gemini (U.S.)
Project Mercury (U.S.)
Space shuttles--United States--History

Space--Social aspects--History
United States. National Aeronautics and Space Administration--History

Genre/Physical Characteristic

Handbooks
Memorandums
Operating manuals
Photographs
Publications
Technical drawings
Technical manuals
Technical reports

Collection Inventory

Series I: Personal Work Materials

Series I contains meeting notes, notebooks, calendars, memos, photographs, awards, certificates, and miscellaneous materials, that were personally created or involved Paul Horsman while he worked as an engineer for NASA Johnson Space Center. The most significant items in the series include Horsman's personal meeting and engineering notebooks: one from the Apollo 10 through early Space Shuttle development programs, and the rest from the early to mid-1990s while Horsman was working in the Space Shuttle Integration and Operations Office at JSC. They provide handwritten updates on projects, engineering design and specification notations, handmade design drawings, and summaries of engineering meetings.

There are also his original computer-generated Space Shuttle Integration and Operations Office calendars, with projects, meetings, and other dates and times listed with handwritten notes by Horsman. The records here include a copy of the 1959 Space Task Group Organization memo, listing all of the NASA engineers and scientists' duty assignments while the personnel were stationed at Langley Field in Virginia before coming to Houston, Texas. This memo shows the position Horsman held in the group of the original NASA engineers and scientists when the organization had first formed.

The series includes photographs of Horsman in different NASA activities, as well as of the award ceremonies where he was presented accomplishment and recognition certificates—along with the original certificates awarded at those ceremonies. One unique item is the original Apollo 11 splashdown party when the Apollo astronauts' capsule landed back to Earth, held at a local Houston hotel for JSC employees on July 24, 1969. The invitation comes with an envelope with Horsman's mailing address on it, showing this was his personal copy of the invitation.

Box/Folder	Description	Date
1/1	Horsman Performance Appraisal	1990-1991
1/2	Horsman's Personal Meetings Notes Notebook	May 1969-June 1974
1/3	Horsman Personal Notebook	December 23, 1992- September 13, 1993
1/4	Horsman Personal Notebook	September 15, 1993- May 16, 1994
1/5	Horsman Personal Notebook	May 11, 1995- May 10, 1996
1/6	Horsman's Space Shuttle Integration and Operations Office Calendars	May-December 1989
1/7	Horsman's Space Shuttle Integration and Operations Office Calendars	June-December 1990
1/8	Horsman's Space Shuttle Integration and Operations Office Calendars	September-November 1992
1/9	Horsman's Space Shuttle Integration and Operations Office Calendars	May-December 1993
1/10	Horsman's Space Shuttle Integration and Operations Office Calendars	December 1995- January 1996, October 1996-January 1997
1/11	Horsman's Office Meetings and Telephone Messages Calendar and Notebook	1990-1991
1/12	NASA Space Task Group Organization Memo (Copy)	August 10, 1959
1/13	NASA Manned Space Center Office of Assistant Director for Research and Development Organization List (Copy)	January 15, 1962
1/14	Horsman's Apollo 11 Splashdown Party Invitation and Envelope	July 1969

HSF-58.B1.F15.1: Official NASA Johnson Space Center photograph of the standard switch panel in the Space Shuttle orbiter around 1984. This panel was designed by engineer Paul F. Horsman [NASA Johnson Space Center photograph S-84-33138].

HSF-58.B1.F15.2: Official NASA Johnson Space Center photograph of the aft display and control console, along with part of the starboard side of the crew cabin, of the full fuselage trainer, on September 5, 1987. This was part of the Johnson Space Center's Space Shuttle orbiter mockup and integration laboratory. This display and control console was partly designed by engineer Paul F. Horsman [NASA Johnson Space Center photograph S-87-41940].

HSF-58.B1.F15.3: Official NASA Johnson Space Center photograph of a straight-on view of the aft display and control console, along with part of the starboard side of the crew cabin, of the full fuselage trainer, on September 5, 1987. This was part of the Johnson Space Center's Space Shuttle orbiter mockup and integration laboratory. This display and control console was partly designed by engineer Paul F. Horsman [NASA Johnson Space Center photograph S-87-41942].

HSF-58.B1.F16.1: Official NASA Johnson Space Center photograph of a group of NASA Manned Spacecraft Center personnel with the Guidance and Control Division, who were presented with Service Awards on September 9, 1966, in Houston, Texas. Pictured are (left to right) Edward A. Stavinoha; John R. Hennon; Norman E. Robertson; Paul F. Horsman; Robert H Lewis; Roy B. Parker; and Darwin E. Crawford [NASA Johnson Space Center photograph S-66-51853].

HSF-58.B1.F16.2: Photograph of NASA engineer Paul F. Horsman (right) being presented his twenty-year service award in June 1979 at NASA Johnson Space Center from an unidentified administrator.

HSF-58.B1.F16.3a-b: Official NASA Johnson Space Center photograph of NASA engineer Paul F. Horsman (center) being presented with an unidentified NASA award in 1981 from Clifford E. Charlesworth (right) at NASA Johnson Space Center [NASA Johnson Space Center photograph S-81-37877].

HSF-58.B1.F16.4: Photograph of NASA engineer Paul F. Horsman (right) shaking hands with an unidentified NASA administrator during what is believed to be an awards presentation for Horsman, sometime in the late 1970s or early 1980s.

HSF-58.B1.F16.5: Official NASA Johnson Space Center photograph of NASA engineer Paul F. Horsman (right) being presented with a sustained superior performance award on February 26, 1985, from an unidentified NASA administrator at Johnson Space Center.

HSF-58.B1.F16.6a-b: Photograph of NASA engineer Paul F. Horsman (center) being presented with a thirty-year service award by two unidentified NASA administrators on June 8, 1986.

HSF-58.B1.F16.7: Photograph of NASA engineer Paul F. Horsman (left) shaking hands with an unidentified NASA administrator while being presented with an award of merit at an unidentified NASA program sometime in the late 1980s or early 1990s.

HSF-58.B1.F16.8: Photograph of NASA engineer Paul F. Horsman (center) being presented with a certificate of commendation by two unidentified NASA administrators in Houston, Texas, in June 1992.

HSF-58.B1.F16.9: Photograph of NASA engineer Paul F. Horsman (left) shaking hands with NASA Johnson Space Center Space and Life Sciences Director Carolyn L. Huntoon (right), as he is presented with an outstanding performance rating award on September 1, 1993, at Johnson Space Center.

HSF-58.B1.F16.10: Photograph of NASA engineer Paul F. Horsman (right) shaking hands with NASA Johnson Space Center Space and Life Sciences Director Carolyn L. Huntoon (left), as he is presented with an outstanding performance rating award sometime between 1991 and 1993

HSF-58.B1.F16.11: Photograph of NASA engineer Paul F. Horsman (right) shaking hands with NASA administrator Director Carolyn L. Huntoon (left), as he is presented with an unidentified award sometime between 1991 and 1995.

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Miscellaneous NASA Photographs

Various dates

HSF-58.B1.F17.1: Official NASA Manned Spacecraft Center photograph of the NASA Manned Spacecraft Center Guidance and Control Division's basketball team, picked holding a trophy after placing second in the Manned Spacecraft Center basketball league on March 4, 1964. Pictured are (left to right, front row) R. Edmiston; J. R. Smith; J. (?) Dale; D. C. Barclay; F. R. Frisbie; (left to right, back row standing) Paul F. Horsman; J. C. Boese; and C. Edmiston [NASA Manned Spacecraft Center photograph S-64-17754].

HSF-58.B1.F17.2: Official NASA Manned Spacecraft Center aerial photograph of the construction of the new Manned Spacecraft Center in Houston, Texas—specifically Clear Lake Site I looking southwest. Photograph taken on March 20, 1964 [NASA Manned Spacecraft Center photograph S-64-18656].

HSF-58.B1.F17.3: Official NASA Johnson Space Center photograph of NASA engineer Paul F. Horsman, wearing headphones, testing an ultrasonic leak detector that was being evaluated for use in locating Space Shuttle Orbiter cabin leaks. This testing setup was in Chamber N at Johnson Space Center in Houston, Texas. Photograph taken in July 1979 [NASA Johnson Space Center photograph S-79-34054].

HSF-58.B1.F17.4: Group photograph of members of the NASA Johnson Space Center marathon group, posing outside in front of a sign for a marathon sponsored by Manufacturers Hanover Corporation in downtown Houston, Texas, at an unidentified date. Marathoner and NASA engineer Paul F. Horsman is pictured (back row, sixth from right).

HSF-58.B1.F17.5: Official NASA Johnson Space Center photograph of NASA engineer and marathoner Paul F. Horsman (center, wearing number 1922) after he crosses the finish line at a marathon in downtown Houston, Texas, sponsored by Manufacturers Hanover Corporation at an unidentified time.

HSF-58.B1.F17.6: Group photograph of members of the NASA Johnson Space Center marathon group, posing outside in front of a sign for a marathon sponsored by Manufacturers Hanover Corporation in downtown Houston, Texas, at an unidentified date. Marathoner and NASA engineer Paul F. Horsman is pictured (back row, third from right).

HSF-58.B1.F17.7: Official NASA Johnson Space Center photograph of Johnson Space Center personnel performing unspecified tests in the Weightless Environment Training Facility (WETF) in 1987. Pictured, wearing scuba gear, is NASA engineer Paul F. Horsman (right) [NASA Johnson Space Center photograph S-87-49985].

HSF-58.B1.F17.8: Official NASA Johnson Space Center photograph of an unidentified group of Johnson Space Center personnel posing outside of a building in Houston, Texas. Pictured is NASA engineer Paul F. Horsman (back row, far left).

HSF-58.B1.F17.9: Official NASA Johnson Space Center photograph of the members of the Johnson Space Center Spacecraft Design Division, posing outside Building 29 in Houston, Texas, at an unspecified date. Pictured is NASA engineer Paul F. Horsman (back row, fourth from right) [a list with all of the personnel's names is included in the back of the photograph sleeve with the photograph].

HSF-58.B1.F17.10: Group photograph of the members of the Johnson Space Center Man-Systems Division posing outside Building 15 in Houston, Texas, at an unspecified date. Pictured is NASA engineer Paul F. Horsman (back row, third from right).

HSF-58.B1.F17.11: Group photograph of the members of an unidentified NASA division posing outside of a building at Johnson Space Center in Houston, Texas, at an unspecified date. Pictured is NASA engineer Paul F. Horsman (center, light blue shirt, standing behind woman with white jacket).

HSF-58.B1.F17.12: Group photograph of the NASA Johnson Space Center personnel honorees, posing on a lawn, during the Manned Flight Awareness Launch for STS-30 around 1989. Pictured is NASA engineer Paul F. Horsman (fifth from right).

HSF-58.B1.F17.13: Group photograph of the NASA Johnson Space Center personnel honorees, posing on a lawn, during the Manned Flight Awareness Launch for STS-30 around 1989. Pictured is NASA engineer Paul F. Horsman (fifth from right).

HSF-58.B1.F17.14: Group photograph of the NASA Johnson Space Center personnel honorees, posing on a lawn, during the Manned Flight Awareness Launch for STS-30 around 1989. Pictured is NASA engineer Paul F. Horsman (third from right).

HSF-58.B1.F17.15: Group photograph of the NASA Johnson Space Center personnel honorees, posing on a lawn, during the Manned Flight Awareness Launch for STS-30 around 1989. Pictured is NASA engineer Paul F. Horsman (fourth from right).

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Horsman's NASA Awards and Certificates

Various dates

Series II: Mercury and Apollo Projects Materials

Series II is composed of design records, photographs, Mercury Program pilot debriefings and communications transcripts, and miscellaneous materials, collected, created, or used by Paul Horsman while he worked on the Mercury and Apollo Programs between 1959 and 1969. These records come from the periods when Horsman worked in the following positions at Langley Field and the Manned Spacecraft Center: engineer in the Flight Controls Section, Dynamics Branch, in the Engineering and Contract Administration Division at Langley; engineer in the Manned Spacecraft Center Control and Guidance Systems Section of the Guidance and Control Division of the Engineering Directorate; and engineer in the Electro-mechanical Systems Section of the Guidance and Control Division of the Engineering Directorate.

The series includes period copies of John Glenn and Gil Grissom's Mercury flight debriefings, as well as the radio communications transcripts for both of their flights. There are Horsman's original design records for planning and dealing with flight simulation and stabilization issues for the Mercury capsule, including photographs of the original plastic mockup that Horsman is believed to have constructed based on his designs for flight simulators. The Mercury flight simulator that Horsman designed went on to be adapted later for testing Apollo spacecraft and training Apollo astronauts, known for the round cage-like rotational device that simulated the changing flight nature of flying in outer space. The series also includes the original design and planning records for the Apollo command and service module's high gain antenna, which Horsman was significantly involved with developing.

Box/Folder	Description	Date
2/1	Horsman's Original Project Mercury Flight Simulation and Stabilization Records	1961-1964
2/2	Original Mercury Capsule Flight Simulator Mockup Photographs	circa 1959-1960

HSF-58.B2.F2.1: Polaroid snapshot of the plastic and metal mockup model of the Mercury flight simulator, designed by NASA engineer Paul F. Horsman, around 1959 or 1960. A wooden artist mannequin is seen seated in the model representing an astronaut. This model was believed to have been constructed by Horsman based on his original similar engineering drawings, while he was working in the NASA Space Task Group at Langley Research Center in Virginia. The photograph was original stapled with three other similar snapshots in a cardstock folder labeled “Photos of Simulator Mockup” [circa 1959-1960].

HSF-58.B2.F2.2: Polaroid snapshot of the plastic and metal mockup model of the Mercury flight simulator, designed by NASA engineer Paul F. Horsman, around 1959 or 1960. The photograph shows the backside of the model, with a chalk board hanging on the wall in the background. This model was believed to have been constructed by Horsman based on his original similar engineering drawings, while he was working in the NASA Space Task Group at Langley Research Center in Virginia. The photograph was original stapled with three other similar snapshots in a cardstock folder labeled “Photos of Simulator Mockup” [circa 1959-1960].

HSF-58.B2.F2.3: Closeup Polaroid snapshot of the plastic and metal mockup model of the Mercury flight simulator, designed by NASA engineer Paul F. Horsman, around 1959 or 1960. A wooden artist mannequin is seen seated in the model representing an astronaut, with this photograph taken from the backside of the model. This model was believed to have been constructed by Horsman based on his original similar engineering drawings, while he was working in the NASA Space Task Group at Langley Research Center in Virginia. The photograph was original stapled with three other similar snapshots in a cardstock folder labeled “Photos of Simulator Mockup” [circa 1959-1960].

HSF-58.B2.F2.4: Closeup Polaroid snapshot of the plastic and metal mockup model of the Mercury flight simulator, designed by NASA engineer Paul F. Horsman, around 1959 or 1960. A wooden artist mannequin is seen seated in the model representing an astronaut. This model was believed to have been constructed by Horsman based on his original similar engineering drawings, while he was working in the NASA Space Task Group at Langley Research Center in Virginia. The photograph was original stapled with three other similar snapshots in a cardstock folder labeled “Photos of Simulator Mockup” [circa 1959-1960].

2/3	Horsman’s Copy of John Glenn’s Mercury-Atlas 6 (MA-6) Pilot’s Debriefing	1962
2/4	Horsman’s Copy of Mercury-Atlas 6 (MA-6) Capsule Communications Transcript	February 27, 1962
2/5	Horsman’s Copy of Gil Grissom’s Mercury-Redstone 4 (MR-4) Postflight Debriefing	1962
2/6	Horsman’s Copy of Mercury-Atlas 7 (MA-7) Capsule	May 31, 1962

Communications Transcript

2/7	North American Aviation, Inc., Apollo Logistics Training Familiarization Briefing	1964
2/8	Apollo CSM High Gain Antenna Records and Designs	1965
2/9	Apollo CSM High Gain Antenna Automatic Reacquisition Proposal	May 1965
2/10	<i>Project Apollo: Acceleration Effects of LM Rate Gyro Package Polarity Test Fixture</i>	March 7, 1969

Series III: Space Shuttle Program Materials

Series III is solely composed of the original Space Shuttle orbiter crew compartment configuration drawing booklets that Paul Horsman created and used as an orbiter crew compartment flight engineer at Johnson Space Center from the mid-1980s through the mid-1990s. Horsman was responsible for developing panel layout and labeling designs, such as size and color of the font on switch and button labels. He also worked on designing the Space Shuttle's Standard Switch Panel, which is a service on the orbiter that can be used to provide additional real-time onboard control through hardwire commands.

The configuration drawings show the complete layout of the NASA astronaut crew compartment for the Shuttle orbiters, with descriptions for every panel, label, button, piece of equipment, etc., in the compartment. The drawing booklets included in this series cover all of the Space Shuttle missions that Horsman worked on from 1984 to 1996, covering STS-35 through STS-85 (with gaps in missions represented). Some of these drawing booklets include Horsman's name written on them, or have his notes written inside.

Box/Folder	Description	Date
2/11	Space Shuttle Crew Compartment Configuration Drawing Booklets	1988-1990
3/1	Space Shuttle Crew Compartment Configuration Drawing Booklets: STS-35, STS-37—40	1990-1991
3/2	Space Shuttle Crew Compartment Configuration Drawing Booklets: STS-41—45	1984, 1990, 1992
3/3	Space Shuttle Crew Compartment Configuration Drawing Booklets: STS-46, STS-49, STS-51—53	1992-1993
3/4	Space Shuttle Crew Compartment Configuration Drawing Booklets: STS-54—59	1993-1994

3/5	Space Shuttle Crew Compartment Configuration Drawing Booklets: STS-60—63, STS-65—66	1994-1995
3/6	Space Shuttle Crew Compartment Configuration Drawing Booklets: STS-67—68, STS-70—72	1994-1996
3/7	Space Shuttle Crew Compartment Configuration Drawing Booklets: STS-73—75, STS-85	1995-1996

Series IV: Horsman's Spacecraft Design and Research Records

Series IV contains engineering drawings, engineering calculations and notes, research information, memos, design plans, planning records, and miscellaneous materials, from Paul Horsman's engineering work on the Apollo and Space Shuttle programs from the late 1960s through the mid-1990s. Some of the earliest materials cover Horsman's work as an engineer for the Electro-mechanical Systems Section of the Guidance and Control Division of the Engineering Directorate, where he studied and addressed the issues of stabilization of magnetic torquers, which were used on the Apollo missions and in early design work for the Space Shuttle. The great majority of the engineering drawings and calculations for this work were made by hand by Horsman, and bear his initials.

The great majority of the materials document Horsman's design work as an engineer in developing the new Space Shuttle Orbiter. His work and his design records focused on orbiter project data configuration and cylinder stowage planning from the early to late 1970s. Starting in the late 1970s, Horsman worked as a Space Shuttle crew compartment engineer, on designing the look, layout, size, and coloring for controls and displays panels inside of the orbiter, mainly in the crew compartment. He also worked on designing the Standard Switch Panel (SSP) layout and nomenclature. The series also includes some miscellaneous project research, background research information, and general office design materials for NASA programs.

Box/Folder	Description	Date
3/8	Lunar Flying Vehicle Design Meetings Records	1967-1968
3/9	Space Shuttle Orbiter STS Actuator Calculations	October-November 1968
3/10	NASA Space Vehicle Design Criteria: Spacecraft Magnetic Torques	December 1968
4/1	Magnetic Torquers for S/C Attitude Control Calculations and Research (Folder 1)	1969
4/2	Magnetic Torquers for S/C Attitude Control Calculations and Research (Folder 2)	1967-1968, undated

4/3	Magnetic Torquers Stabilizations Records	1969, undated
4/4	Manned Spacecraft Center Guidance and Control Division Magnetic Torquers Design Records	1960s-1970s
4/5	Orbiter Project Data Configuration and System Records	1973-1974
4/6	Space Shuttle Expanded Nested Array Cylinder Stowage Records	circa 1975, undated
4/7	Space Shuttle Cylinder Stowage Planning Records	1975, undated
4/8	Orbiter Nomenclature Standardization Requirements	July 1978, undated
4/9	Orbiter Panel Nomenclature Dimensioning and Location Requirements	1979-1980
4/10	Orbiter Miscellaneous Standard Switch Panels Design Records	1981-1995
5/1	Space Shuttle Orbiter Controls and Displays Panel Design Criteria and Guidelines	1976, undated
5/2	Space Shuttle Orbiter Controls and Panel Design Criteria and Guidelines Folder	1976, 1982
5/3	Orbiter Standard Switch Panel (SSP) Layout and Nomenclature	1982, undated
5/4	Orbiter Payload Displays and Controls Nomenclature Design Guidelines	1984, 1990-1992
5/5	Orbiter Standard Switch Panels Design Records	1984, 1988, undated
5/6	SSP Nomenclature Placard Kit Drawings Change Notices for STS	1991-1994
5/7	Orbiter Printed Font Styles for Display and Control Panel Labels Folder	1960s-1990s
5/8	Orbiter Crew Compartment Configuration Design Records	Undated
5/9	Material Processing Specification for Applied Markings for Orbiter	September 1989

5/10	STS-1 Shuttle Stowage Installation Document (Revision B)	March 15, 1979
5/11	STS-1 Crew Compartment Drawing Set [with revisions]	1980
5/12	STS-75 Crew Compartment Plug-in Plan Distribution	February 6, 1996
5/13	Orbiter Mid-deck Payload Plug-in Planning Records	Undated
5/14	Miscellaneous Manned Spacecraft Center Control and Guidance Branch Engineering and Design Records	1963, undated
5/15	Hazards and Handling of Metallic Mercury Research	Various dates

Series V: NASA and Miscellaneous Publications and Reports

Series V is composed of published reports, booklets, published presentations, published conference proceedings, contractor reports and manuals, NASA publications, NASA handbooks and manuals, NASA strategic plans, telephone directories, and miscellaneous publications, used and collected by Paul Horsman throughout his entire NASA career. Many of the publications are handbooks, manuals, glossaries, and technical specifications, that Horsman actually used for his work on the Mercury Program, Apollo Program, and Space Shuttle Program.

Some of the most unique publications are reports, booklets, and conference proceedings on early space navigation and human flight during the Gemini and Mercury programs at NASA. They were not produced solely by NASA, but they were collected and consulted as the compilation of knowledge and research on human space flight grew in the late 1950s and early 1960s. Many of the publications in this series are available through other repositories; however, these publications often have Horsman's personal notes written within. Some of the publications also are rare in terms of limited circulation for the materials from the early 1960s, and they were kept in the collection as a result. There are also two 1980s Johnson Space Center telephone directories included here.

Box/Folder	Description	Date
6/1	<i>Principles of Flight Programmed Text</i>	December 1971
6/2	<i>Orbiter Middeck Payload Provisions Handbook (Revision C)</i>	March 1984
6/3	<i>Shuttle/Payload Interface Definition Document for Middeck Accommodations</i>	March 1988
6/4	<i>Human Factors Considerations for Transillumination Pushbutton Panel Layouts Booklet</i>	September 18, 1991

6/5	<i>Man-Systems Integration Standards (STD-3000) Manual</i>	August 1994
6/6	<i>International Space Station Alpha Reference Guide Incremental Design Review #1 Manual</i>	March 29, 1995
6/7	NASA Publications and Technical Specifications Manuals	1972, 1974, 1976, 1984
6/8	<i>Manned Spacecraft Center Writer's Guide</i>	October 1965
6/9	<i>Space Transportation System and Association Payloads: Glossary, Acronyms, and Abbreviations</i>	February 1985
7/1	Manned Spacecraft and Related Flight Crew Equipment Abbreviations, Controls, and Displays General Specifications Manuals	1981-1982
7/2	<i>Johnson Space Center Standards of Conduct Training Participant Manual</i>	1993
7/3	Johnson Space Center Telephone Directories	1986, 1989
7/4	Results of the 1st and 2nd U.S. Manned Suborbital Space Flight Proceedings Books	June-July 1961
7/5	Robert C. Duncan Lecture: <i>Guidance, Control, and Navigation of Manned Spacecraft</i>	November 6, 1964
7/6	<i>Research and Investigation on Satellite Attitude Control, Part II: Investigation of Space Vehicle Attitude Control Techniques</i>	June 1965
7/7	American Rocket Society Guidance, Control, and Navigation Conference: "A New Method of Attitude Control Utilizing the Earth's Magnet Field for Long Life Space Vehicles" Paper	August 1961
7/8	Radio Corporation of America (RCA) Booklet: <i>Tiros—A Story of Achievement</i>	December 1963-1964
7/9	General Motors Space Navigation and Orbital Mechanics Course Textbooks	October 1968, February 1969, November 1969
8/1	Kollsman Instrument Company "Navigation and the Stars" Report	Undated

8/2	NASA <i>Compressed Gas Handbook</i>	1969
8/3	<i>Anthropometric Source Book Volume I: Anthropometry for Designers</i>	July 1978
8/4	NASA <i>Spinoff 1985</i> Booklet	August 1985
8/5	NASA Strategic Plans	January-February 1996

Series VI: Johnson Space Center Memos

Series VI is composed of memos written by or received by Paul Horsman, covering a wide variety of tasks, projects, and duties, between 1964 and 1988 at Johnson Space Center. The most unique memos are those covering Horsman’s work on the Apollo Program from 1965 to 1969.

Box/Folder	Description	Date
9/1	Manned Spacecraft Center Guidance and Control Division Section Heads Task Descriptions	1964-1964
9/2	Horsman’s Electro-mechanical Section Memos	1965-1968
9/3	Horsman’s Engineering Memos	1969-1973
9/4	Memos on Safety of Wallace and Tiernan Pressure Gauges	December 1971- January 1972
9/5	Horsman’s Space Shuttle Integration and Operations Office Memos with Agendas	1987-1988

Series VII: Miscellaneous Materials

Series VII contains miscellaneous memos, notes, records, calculations, programs, engineering drawings, and other materials, created, used, or kept by Paul Horsman during his NASA tenure from 1961 to 1995. Some unique items include emails and memos from Horsman providing change suggestions for Johnson Space Center management, as part of a center-wide effort to receive employee feedback on potential changes for the workplace that would be beneficial. Some of Horsman’s memos provide detailed justification and research on why it is better to use screws to adhere clocks to walls than nails. Suggestions like this show the detail that JSC engineers paid to everything, even if the larger issues or daily practical requirements would not allow for the changes.

There are also two Johnson Space Center honor awards ceremonies’ programs, in which Horsman is featured. Another interesting item is a NASA 15th anniversary activities newsletter in 1973, with a history of NASA up to that time. The most important records in this series are the

oversized engineering drawings by Paul Horsman of the Mercury capsule design, and the designs for the Mercury flight simulator created between September 1959 and April 1960 at the NASA Space Force Task Group in Langley, Virginia. These pencil engineering drawings are some of the most original hand-created drawings of the Mercury capsule and new flight simulator known outside of the National Archives and Records Administration's NASA records series.

Box/Folder	Description	Date
9/6	Horsman's Miscellaneous Calculations, Memos, and Records	1961-1963, 1965, undated
9/7	Horsman's NASA Change Suggestions	1973-1975, undated
9/8	NASA Activities Newsletter—15th Anniversary Edition	September 15, 1973
9/9	Johnson Space Center Honor Awards Ceremony Program	1973, 1992
9/10	Miscellaneous Records	1984, 1995, undated
Oversized Folder 1	Horsman's Mercury Capsule and Flight Simulator Engineering Drawings and Specifications	1959-1960, undated