

University of Houston Clear Lake

Archives and Special Collections

HSF-68 Harry T. Briggs Papers

[Human Space Flight Collection]

Collection Number: HSF-68

Title: Harry T. Briggs Papers

Dates: 1963-1991, 1998, various dates, undated

Creator: Harry T. Briggs

Abstract

The Harry T. Briggs Papers is composed of personnel records, certificates, correspondence, training and operational manuals, handbooks, workbooks, specifications, reports, binders, plans, notes, documents, contracts, presentation slides, memorandums, handouts, booklets, brochures, telephone directories, and miscellaneous materials, documenting the entire career of quality assurance and control engineer and officer Harry T. Briggs at NASA Johnson Space Center largely between 1963 and 1991. Briggs worked as the NASA Manned Spacecraft Center quality control engineer at the Grumman Aircraft Engineering Corporation in Bethpage, New York, for Grumman's construction of the Lunar Excursion Module (later the Lunar Module) for the Apollo Program.

Briggs also would become the one of the chief quality control engineers who worked for JSC on the development of the Space Shuttle orbiter in the 1970s and early 1980s. Eventually, Briggs became the chief of the Requirements and Compliance Branch of the Quality Assurance Division, specifically assigned to the Safety, Reliability, and Quality Assurance (SR&QA) Office in that Branch. He was the chief quality control officer partnering with West Germany on their Biostack experiments for Apollo 16, Apollo 17, and the Apollo-Soyuz Test Project in the 1970s. The bulk of the collection is composed of Briggs' personal copies and drafts of quality assurance and quality control guidelines, manuals, contractor contracts, and other records, that he used in his role developing JSC's quality control standards beginning with the Apollo Program through the initial design for the United States' planned Space Station Freedom in the late 1980s.

These records show the progression of quality control planning, standards, and design implemented by NASA and JSC as the various space programs developed from the 1960s through the 1980s. Briggs' most important records are his copies of original manuals, handbooks, and other records, he created or used while assigned as NASA's quality control engineer for the Lunar Module at Grumman Aircraft between 1963 and 1969. The other set of extremely important records in this collection are Briggs' copies of the original West Germany Biostack experiment projects design, implementation, and report records—many in German.

Extent: 4.40 linear feet

Language(s): English, German

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

A number of materials in this collection was produced for NASA by contractors on work for-hire contracts. Many of the contractors copyrighted or patented the information or designs or content included in the publications in this collection. As such, the University of Houston-Clear Lake Archives and Special Collections does not own the copyright to all the materials in this collection. Materials created by government agencies such as NASA are public use; but materials created by private organizations other than NASA retain their copyright, and the copyright remains with the creator and organization, under Title 17 of the U.S. Copyright Law. Researchers are responsible for obtaining permission from the copyright holder(s) to use materials beyond the "fair use" clause of the U.S. Copyright Law.

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Preferred Citation

[Item name or title], [Box Numbers], [Folder Numbers], Harry T. Briggs Papers, HSF-68, 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 donated to the University of Houston-Clear Lake Archives and Special Collections by Timothy Briggs of Seabrook, Texas (Harry Briggs' son), in February 2011.

Processing Information

There was no particular order to the collection when it was received by UHCL Archives from the donor. Small sets of materials were stored or grouped together, and these groupings were retained when the collection was processed. A number of binders had the contents removed from their bindings or three-ring binders. Where the binders were very thick, the materials in the original binders were divided between two or more folders since the manuals or handbooks were too wide to fit if stored in a single archival folder. The folders were labeled in the folder titles as “Part 1” and “Part 2” in parentheses after the manual or handbook title. The order of materials in the manuals or handbooks were not changed when they were divided to fit in two separate folders for long-term storage. Any covers or spine labels with important information about the binders’ contents were photocopied for preservation purposes, and the copies stored at the front of the binders’ materials in folders.

An entire records center box-worth of materials related to the United States-Germany Biostack experiments led by Frankfurt University professor Horst Bucker were significantly damaged by active mold and water exposure. Active mold had broken out in several areas along the edges of sets and binders of records, causing pages to stick to each other, have blooming mold colonies, and have significant discoloration stains on all of the documents. Photographs in reports were stuck together and permanently damaged, as were color negatives of aspects of the experiments and the various components for the Biostack. Due to the mold damage and the risk of mold spreading throughout the rest of the UHCL Archives’ holdings in storage, these moldy materials were all photocopied to create preservation copies that could be retained for long-term storage of the archival collection. Legal-sized or oversized materials were photocopied at a reduced ratio in order to fit the items to letter-sized sheets of paper. In some cases, portions of the documents or information were cut-off in the photocopies, but the majority of the content was retained in the copies.

A lot of the Biostack experiment documents were Harry Briggs’ working copies or originals for his role as quality assurance/control officer for NASA Manned Spacecraft Center on the projects. There are a lot of duplicates of the same reports and documents, but they were stored in different binders or folders of records. As a result, when photocopying the records, the duplicated materials were all photocopied and kept in their original location within the files. Some of the documents were discarded as being blank forms or blank sheets. All of the moldy records, documents, photographs, and negatives for the Biostack experiment aspects had to be discarded in keeping with UHCL Archives policies.

A number of non-moldy materials were removed from the collection in keeping with the UHCL Archives’ collection policy by the processing archivist while the collection was being arranged and described, as they were duplicates of materials already in other UHCL Archives’ collections or considered not to have enduring historical research value. Some NASA contractor materials that were still under intellectual rights to the contractor—and determined to have no long-term requirement for historical retention—were removed from the collection since they would be inaccessible to researchers anyway.

Processed by: Matthew M. Peek, February-March 2023.

Arrangement

The collection is arranged based on the program or purpose of the materials based on Harry Briggs' work history. The collection is arranged into the following series: Series I: Briggs Personal Materials; Series II: Grumman Apollo Materials; Series III: Miscellaneous Apollo Program Materials; Series IV: NASA-Germany Biostack Experiments Records; Series V: Space Shuttle Quality Assurance Records; Series VI: Space Station Quality Assurance Records; Series VII: Miscellaneous Quality Assurance Records; and Series VIII: Miscellaneous Materials.

Biographical Note

Harry Thomas Briggs was born on November 28, 1921, in Vienna, Austria, as Heinrich Thomas Bamberger to Leopold and Marie Bamberger. He would arrive in the United States at the age of 17 at Ellis Island in New York City in 1939. Bamberger arrived in the U.S. aboard the ship the SS *President Harding* that left from Southampton, England, between April and May 1939. Bamberger and his 13-year old brother Thomas Martin Bamberger were listed on the ship's manifest as being Jewish, meaning they were escaping Austria just over a year after the Nazis took over the country. The two brothers arrived on the ship without their parents (though it is unknown if they traveled with a family member). After immigrating, Bamberger changed his name to the Anglicized "Harry Briggs," but kept his middle name.

Briggs would live in New York City. He attended the RCA (Radio Corporation of America) Institute studying radio technology, and graduated from that program in 1943. With the United States' entrance into World War II, Harry Briggs would enter service in the U.S. Army starting on July 7, 1943. He served in the U.S. Army Signal Corps until February 2, 1946. After his military service, Briggs used the GI Bill to attend Purdue University, graduating in 1948 with a bachelor of science degree in electrical engineering (BSEE). In 1948, he would join the U.S. Army Military Intelligence Reserve, serving in the Army Reserves through 1955.

Harry Briggs would go to work for General Motors AC Sparkplug Division in the summer of 1947, working on spark plug development in a summer while he was still attending college. After graduating college, he would go to work full-time for the General Electric Company in June 1948, starting out for a two-year period in what was called the "Test Course" to familiarize him with GE's products and operations until 1950. From 1951 to 1956, Briggs worked with the Installation and Service Engineering Division in Baltimore, Maryland, installing and troubleshooting GE products. From 1956 to 1958, Briggs worked for Electric Bond and Share Company (Ebasco) with their foreign electric power company American & Foreign Power Company, providing technical advice on electrical power plant maintenance for electric utility clients in Central and South America.

From May 1958 to December 1959, Harry Briggs worked as a project and design engineer for the Plant Engineering Department at Republic Aviation Corporation in Farmingdale, New York. Starting in December 1959, he went to work as for the American Bosch Arma Corporation—the company that developed the inertial guidance system for the Atlas missile. He worked on the Missile Inertial Guidance System for American Bosch, eventually becoming the product services

supervisor from December 1961 to March 1963. He would then go to work for Potter Instruments Company, Inc., on Long Island, New York, as a quality control (or quality assurance or reliability) engineer starting in April 1963.

Starting in 1964, Harry Briggs went to work for NASA Manned Spacecraft Center (later Johnson Space Center) on the Apollo Program. With Grumman Aircraft Engineering Corporation winning the contract to construct the Lunar Excursion Module (later the Lunar Module) for the Apollo Program, NASA assigned employees to work at Grumman to help supervise aspects of the Lunar Module construction. Briggs was assigned to Grumman at Bethpage, New York, as a quality engineer. On July 27, 1965, Briggs was appointed acting head of Quality Assurance for the Apollo Spacecraft Program Office at Grumman on behalf of the Manned Spacecraft Center. Eventually, he became the Chief of the Manned Spacecraft Center Quality Assurance Office at Grumman.

With the end of the Lunar Module program with Grumman, Briggs would be relocated to JSC in Houston, Texas, to work in quality assurance. By the early 1970s, Briggs was working in the Quality Assurance Division as a special assistant to the chief of the division. His supervisors described his work as being precise and reliable, dedicated to doing more than expected for their position, and completing all work assignments on schedule. These qualities led to his being one of Johnson Space Center's main quality assurance engineers in the 1970s and 1980s.

One of his first major projects at Johnson Space Center was working with German scientists for the launch of Biostack experiments on Apollo 16 and Apollo 17 in 1972. When Apollo 16 launched in 1972, the Federal Republic of Germany (or West Germany) launched its first life science research project in space, called the Biostack experiment. The experiment was designed to “study the biological effects of individual heavy cosmic particles of high-energy loss (HZE) not available on Earth; to study the influence of additional spaceflight factors; to get some knowledge on the mechanism by which HZE particles damage biological materials; to get information on the spectrum of charge and energy of the cosmic ions in the spacecraft; to estimate the radiation hazards for man in space.”¹

For this purpose, the Biostack experiment comprised a widespread spectrum of biological objects, including bacterial spores, plant seeds, shrimp eggs, insect eggs, and other sources. The German project lead was Dr. Horst Bückner of the University of Frankfurt. Due to his native German language fluency, Harry Briggs corresponded with Dr. Bückner in German to coordinate aspects of the Biostack experiment. Briggs continued on the project from 1969 through 1975 when the Biostack experiments were extended to include the Apollo-Soyuz Test Project (ASTP).

In November 1975, Briggs was named as acting branch chief for the Procurement Support Branch of the Quality Assurance Division at JSC. By 1979, he was serving as the deputy chief (later chief) of the Requirements and Compliance Branch of the Quality Assurance Division. Specifically, he worked in the Safety, Reliability, and Quality Assurance (SR&QA) Office in that Branch. Harry Briggs was one of the chief quality control engineers who worked for

¹ Horst Bückner, “The Biostack Experiments I and II aboard Apollo 16 and 17,” *Life Sciences in Space Research*, 1974;12:43-50, viewed online at <https://pubmed.ncbi.nlm.nih.gov/11908528/>

Johnson Space Center on the development of the Space Shuttle orbiter in the 1970s and early 1980s.

In his own words from a competitive NASA placement plan form from 1986, his dedication to safety came because “Safety has always interested me and because of my curiosity I have made it my business to become academically familiar with the criteria of system safety...”. He continued as to work as supervisory assistant (also termed the technical assistant) for the director of the Safety, Reliability, and Quality Assurance (SR&QA) Office, and as chief of the Requirements and Compliance Branch by 1988.

It is unknown when or if Briggs retired from NASA Johnson Space Center. Harry Briggs would marry Alice Louise Briggs. Harry T. Briggs died on April 27, 1995. He was interred in the Friedhof Glarus cemetery in Glarus, Switzerland.

Scope and Content

The collection is composed of personnel records, certificates, correspondence, training and operational manuals, handbooks, workbooks, specifications, reports, binders, plans, notes, documents, contracts, presentation slides, memorandums, handouts, booklets, brochures, telephone directories, and miscellaneous materials, documenting the entire career of quality assurance and control engineer and officer Harry T. Briggs at NASA Johnson Space Center largely between 1963 and 1991. Briggs worked as the NASA Manned Spacecraft Center quality control engineer at the Grumman Aircraft Engineering Corporation in Bethpage, New York, for Grumman’s construction of the Lunar Excursion Module (later the Lunar Module) for the Apollo Program.

Briggs also would become the one of the chief quality control engineers who worked for JSC on the development of the Space Shuttle orbiter in the 1970s and early 1980s. Eventually, Briggs became the chief of the Requirements and Compliance Branch of the Quality Assurance Division, specifically assigned to the Safety, Reliability, and Quality Assurance (SR&QA) Office in that Branch. He was the chief quality control officer partnering with West Germany on their Biostack experiments for Apollo 16, Apollo 17, and the Apollo-Soyuz Test Project in the 1970s.

The bulk of the collection is composed of Briggs’ personal copies and drafts of quality assurance and quality control guidelines, manuals, contractor contracts, and other records, that he used in his role developing JSC’s quality control standards beginning with the Apollo Program through the initial design for the United States’ planned Space Station Freedom in the late 1980s. These records show the progression of quality control planning, standards, and design implemented by NASA and JSC as the various space programs developed from the 1960s through the 1980s.

Briggs’ most important records are his copies of original manuals, handbooks, and other records, he created or used while assigned as NASA’s quality control engineer for the Lunar Module at Grumman Aircraft between 1963 and 1969. Some of the manuals Briggs has are either extremely rare or do not exist anywhere else. They offer insight into the quality control standards being updated in real-time for the Apollo Lunar Module as lessons were being learned from test

programs and the early Apollo missions leading up to Apollo 11. The other set of extremely important records in this collection are Briggs' copies of the original West Germany Biostack experiment projects design, implementation, and report records—many in German. These records contain personal and professional correspondence in German between Briggs and the Biostack experiments principal investigator Dr. Horst Bucker.

The collection is arranged based on the program or purpose of the materials based on Harry Briggs' work history. The collection is arranged into the following series: Series I: Briggs Personal Materials; Series II: Grumman Apollo Materials; Series III: Miscellaneous Apollo Program Materials; Series IV: NASA-Germany Biostack Experiments Records; Series V: Space Shuttle Quality Assurance Records; Series VI: Space Station Quality Assurance Records; Series VII: Miscellaneous Quality Assurance Records; and Series VIII: Miscellaneous Materials.

Subject Terms

Personal/Family Name

Bamberger, Heinrich T. (Heinrich Thomas), 1921-1995
Briggs, Harry T. (Harry Thomas), 1921-1995

Corporate Names

Boeing Aerospace Company
Ford Aerospace & Communications Corporation
Grumman Aircraft Engineering Corporation
Lockheed Martin
Lyndon B. Johnson Space Center
McDonnell Douglas Corporation
North American Aviation
Rockwell International. Space Division
Rockwell Space Operations Company
United States. National Aeronautics and Space Administration

Geographic Name

Houston (Tex.)

Topical Term

Apollo 16 (Spacecraft)
Apollo 17 (Spacecraft)
Apollo Soyuz Test Project
International Space Station
Lyndon B. Johnson Space Center
Manned space flight--History
Manned Spacecraft Center (U.S.)

Project Apollo (U.S.)
 Skylab Program
 Spacelab Program
 Space shuttles--United States--History
 Space--Social aspects--History
 United States. National Aeronautics and Space Administration--History

Genre/Physical Characteristic

Booklets
 Correspondence
 Handbooks
 Memorandums
 Notebooks
 Operating manuals
 Personnel records
 Publications
 Technical manuals
 Technical reports

Collection Inventory

Series I: Briggs Personal Materials

Series I is composed of personnel records, certificates, correspondence, notes and miscellaneous materials, documenting the professional work history of Harry T. Briggs before and during his tenure working at NASA Johnson Space Center. Most of the records were originally stored in Briggs' original NASA personnel file, which includes his original resumes and federal employment application forms, employment history files, advanced education records, training records, and professional and training certificates. Of particular interest are Briggs' federal employment application forms, which provide significant personal and pre-1964 work history prior to his coming to work for NASA.

Box/Folder	Description	Date
1/1	Briggs Personnel File: Harry Briggs Resume and Federal Employment Applications	Undated
1/2	Briggs Personnel File: Grumman Aircraft and JSC Employment Records	1960s-1980s
1/3	Briggs Personnel File: Hofstra University Records	1964-1965
1/4	Briggs Personnel File: JSC Training Records	1973, 1975-1978, 1980-1981, 1983, 1987

1/5	Briggs Personnel File: Certificates	1964, 1977, 1987-1988
1/6	Miscellaneous Correspondence and Notes	1973, 1988, 1990
1/7	Briggs' NASA Aero-space Transport Group of the Metropolitan Section, ASCE, Presentation on Saturn/Apollo Program	April 14, 1965

Series II: Grumman Apollo Materials

Series II is composed of training manuals, handbooks, workbooks, brochures, booklets, guides, correspondence, reports, binders, and miscellaneous materials, created or acquired and used by Harry Briggs while he worked as the NASA Manned Spacecraft Center quality control engineer at the Grumman Aircraft Engineering Corporation in Bethpage, New York, for Grumman's construction of the Lunar Excursion Module (later the Lunar Module) for the Apollo Program. On July 27, 1965, Briggs was appointed acting head of Quality Assurance for the Apollo Spacecraft Program Office at Grumman; eventually, he became the Chief of the Manned Spacecraft Center Quality Assurance Office at Grumman. Briggs worked in this role from 1964 to 1969.

The series contains Grumman Aircraft's original design, operation, and familiarity manuals and requirements records for the operation of the Apollo Lunar Excursion Module (LEM). These are extremely unique records showing the transition in designs as quality control improvements were being constantly made to the Apollo spacecraft up through the launch of Apollo 11. The most unique items in this series are the two original First Manned Lunar Landing Familiarization Manuals from 1964 and 1965. There are also Briggs' original binders of quality control records and requirements from NASA for Grumman for the Lunar Module (LM). These records offer a look at the reasons behind the quality control changes being issued from NASA as the Apollo Program developed through the 1960s. There are also several of Grumman's original Apollo program and vehicle promotional booklets and brochures, which demonstrate how the company was positioning itself within the American consciousness as part of the aerospace industry.

Box/Folder	Description	Date
1/8	Grumman Aircraft Engineering Apollo Spacecraft Identification and Traceability Specification Requirements	1963-1965
1/9	<i>Grumman Horizons</i> Magazine Issue (Vol. 4, No. 2)	1964
1/10	Grumman Aircraft Lunar Excursion Module: First Manned Lunar Landing Familiarization Manual	January 15, 1964
1/11	Grumman Aircraft Lunar Excursion Module: First Manned Lunar Landing Familiarization Manual	October 15, 1965

1/12	Grumman Aircraft Manufacturing Planning and Controls Booklet: Lunar Module Final Assembly Subsystem Installations	November 1966
1/13	Grumman Aircraft Promotional Booklet: Project Apollo—The Lunar Module	October 1967
1/14	Grumman Aircraft Naval Plant Repo. Lunar Module Quality Assurance Manual Binder (Part 1)	1967-1969
1/15	Grumman Aircraft Naval Plant Repo. Lunar Module Quality Assurance Manual Binder (Part 2)	1967-1969
1/16	Grumman Aircraft LM Quality Control Program Plan Binder	December 1, 1968
1/17	Grumman Aircraft Lunar Module Instruction Manual Binder	1968-1969
1/18	R&QA Assessment of Stress Corrosion on the LM Structure	January 3, 1969
1/19	Grumman Aircraft Lunar Module Modification Program: Vehicle Familiarization Manual	August 28, 1969
1/20	Grumman Aircraft Brochure: Apollo 12—To the Ocean of Storms	circa 1960s
1/21	Grumman Aircraft Promotional Booklet: The Lunar Excursion Module for Project Apollo	[1960s]
1/22	Grumman Aerospace LM Quality Program Monthly Review	July 1970
1/23	Grumman Aerospace Acceptance/Shipping Document for Lunar Module 12, Ascent Stage	June 14, 1971

Series III: Miscellaneous Apollo Program Materials

Series III consists of training and operational manuals, handbooks, guides, and miscellaneous materials, created or acquired and used by Harry Briggs while he worked as the NASA Manned Spacecraft Center quality control engineer on the Apollo Program for the Lunar Excursion Module (later the Lunar Module) between 1963 and 1972. The materials are largely specific and general Apollo Program quality control and inspection guidelines or manuals issued either generally by NASA or specifically by NASA Manned Spacecraft Center in Houston. Perhaps the

most unique item in this series is the original NASA Apollo Operations Handbook for the Lunar Module 10 (LM-10), Volume 1, which flew as part of the Apollo 15 mission in 1971.

Box/Folder	Description	Date
1/24	MSC Apollo: Guideline for Delegating Source Inspection Responsibilities to Government Inspection Agencies—LEM Project Draft (General Electric)	September 1, 1963
1/25	NASA Apollo Reliability Prediction, Estimation, and Evaluation Guidelines—Vol. 1, Methodology (Draft)	December 1963
1/26	Apollo Program: Procedure for Failure Mode, Effects, and Criticality Analysis (FMECA)	August 1966
1/27	MSC Working Paper: Fracture Mechanics Analysis of Apollo Block I Titanium Alloy Pressure Vessels (CSM)	February 1967
1/28	MSC Parts and Assemblies Specification for Marking, Identification, and Inspection (Revision A)	June 1967
1/29	MSC Apollo Spacecraft Program Configuration Management Manual	December 15, 1967
1/30	MSC Apollo Quality Requirements Lunar Module Manual	October 16, 1968
1/31	MSC Lunar Module Pressure Vessel Operating Criteria Specification Manual	October 25, 1968
1/32	MSC Apollo CSM Pressure Vessel Operating Criteria Specification Manual	October 1968
1/33	NASA Office of Manned Space Flight Apollo Configuration Management Manual	January 1970
1/34	NASA Apollo Operations Handbook LM-10, Vol. 1 (Part 1)	1971-1972
1/35	NASA Apollo Operations Handbook LM-10, Vol. 1 (Part 2)	1971-1972
1/36	MSC Lunar Surface Scientific Equipment for Apollo Mission 16 Furnished by Lunar Surface Project Office	January 10, 1972

Series IV: NASA-Germany Biostack Experiments Records

Series IV is composed of some originals but mostly preservation photocopies of binders of records, reports, and miscellaneous records, documenting Harry Briggs' role in the German Biostack experiments for the Apollo 16, Apollo 17, and Apollo-Soyuz Test Project between 1972 and 1975. One of Briggs' first major projects at Johnson Space Center was working with German scientists for the launch of Biostack experiments on Apollo 16 and Apollo 17 in 1972. When Apollo 16 launched in 1972, the Federal Republic of Germany (or West Germany) launched its first life science research project in space, called the Biostack experiment to study the biological effects of individual heavy cosmic particles of high-energy loss (HZE).

For this purpose, the Biostack experiment comprised a widespread spectrum of biological objects, including bacterial spores, plant seeds, shrimp eggs, insect eggs, and other sources. The German project lead was Dr. Horst Bückner of the University of Frankfurt. Due to his native German language fluency, Harry Briggs corresponded with Dr. Bückner in German to coordinate aspects of the Biostack experiment. Briggs continued on the project from 1969 through 1975 when the Biostack experiments were extended to include the Apollo-Soyuz Test Project (ASTP).

An entire records center box-worth of materials related to the United States-Germany Biostack experiments led by Frankfurt University professor Horst Bückner were significantly damaged by active mold and water exposure. Due to the mold damage and the risk of mold spreading throughout the rest of the UHCL Archives' holdings in storage, these moldy materials were all photocopied to create preservation copies that could be retained for long-term storage of the archival collection. Legal-sized or oversized materials were photocopied at a reduced ratio in order to fit the items to letter-sized sheets of paper. In some cases, portions of the documents or information were cut-off in the photocopies, but the majority of the content was retained in the copies.

A lot of the Biostack experiment documents were Harry Briggs' working copies or originals for his role as quality assurance/control officer for NASA Manned Spacecraft Center on the projects. There are a lot of duplicates of the same reports and documents, but they were stored in different binders or folders of records. As a result, when photocopying the records, the duplicated materials were all photocopied and kept in their original location within the files. Some of the documents were discarded as being blank forms or blank sheets.

The most unique records in this series are believed to be the original shipment records for the Biostack metal canisters from West Germany to the United States in 1975 for the ASTP project. The Biostack canisters were shipped on commercial airlines, but had to have special clearance and security authorizations to pass through customs without damaging the integrity of the canister for the experiment. The records demonstrate the way that prior to the 1980s NASA utilized commercial airlines to ship everything from experimental devices to moon rocks to radiation materials within the U.S. and to the U.S. from international partners. Also, there are German-language records on the Biostack experiments, including letters written in German by both Bückner and Briggs to each other. The records include engineering drawings of all portions of the Biostack canisters.

Box/Folder	Description	Date
2/1	Briggs' Biostack Experiment M-211 Records Binder [Preservation Photocopy]	1969-1972
2/2	Briggs' Personal Biological Stack Notebook [Preservation Photocopy]	1971-1972
2/3	Horst Bucker Goethe University Frankfurt Report: Biostack Experiment M-211, Apollo 16	September 8, 1972
2/4	Horst Bucker's Biostack Experiment M-211 Apollo 16, 2nd Quarterly Report	December 8, 1972
2/5	Briggs' Biostack Experiment M-211, Vol. 2, Binder [Preservation Photocopy]	1972
2/6	Biostack Experiment M-211 Records and Notes [Preservation Copy]	1972-1974
2/7	Biostack II Experiment M-211, Apollo 17: Quick Look Report [Preservation Copy]	February 1973
2/8	Briggs' Biostack MA107 Experiments for Apollo-Soyuz Test Project Documents Folder [Preservation Copy]	1973-1974
2/9	Horst Bucker Goethe University Frankfurt Report: Biostack III Experiment MA-107 of ASTP—Individual action of HZE-particles on biological systems during spaceflight	December 1975
2/10	Biostack MA-107 (No. III) Shipment to U.S. Records	1975, undated
2/11	Biostack Experiment M-211 NASA and German Project Records and Notes [Preservation Copy]	1972, 1975, undated
2/12	MA-107 Biostack Experiment for ASTP: Guidelines for SR&QA Observer and Courier [Preservation Copy]	1970s

Series V: Space Shuttle Quality Assurance Records

V consists of handbooks, manuals, specifications, reports, presentation slides, binders, plans, documents, and miscellaneous materials, created or accumulated by Harry Briggs while he was working for NASA Johnson Space Center. The materials related to the quality assurance and quality control program and standards Briggs developed as one of the chief quality control engineers who worked for JSC on the development of the Space Shuttle orbiter in the 1970s and

early 1980s. By 1979, he was serving as the deputy chief (later chief) of the Requirements and Compliance Branch of the Quality Assurance Division. Specifically, he worked in the Safety, Reliability, and Quality Assurance (SR&QA) Office in that Branch. This was right in the middle of the development of the Shuttle orbiter leading to the launch of STS-1 in 1981.

The most significant items in this series are Briggs' copies of the developing design configurations, contamination control requirements, and varying quality assurance guidelines and manuals produced at Johnson Space Center between 1970 and 1977 leading up to the production of the first test version of the Shuttle orbiter *Enterprise* in 1976. These quality control materials are extremely significant for this time period, in light of the later disaster with the *Challenger* in 1986. There is a noticeable shift in the nature of the quality control and assurance manuals and documents starting in February 1986 for the National Space Transportation System, with the nature of the materials Briggs kept focusing on topics like "failure modes" and "hazards analysis" in response to *Challenger*. From 1987 to 1990, Briggs' quality assurance materials focus on general safety requirements for the Shuttle program at JSC, and safety standards for orbiter payloads' design and development. Series V shows the overall change in quality control standards before and after *Challenger*.

Box/Folder	Description	Date
2/13	JSC Space Shuttle Program General Specification: Filters, Wire Cloth Type	March 3, 1970
2/14	NASA MSC Space Shuttle Program: Configuration Management Manual (with Correspondence)	October 17, 1972
2/15	North American Rockwell Space Shuttle Program: Orbiter Quality Assurance Plan Binder	October 23, 1973
2/16	Rockwell International Orbiter Definition Handbook: Preliminary Design Review Configuration	February 4, 1974
2/17	JSC Contamination Control Requirements Manual and Specification for the Space Shuttle Program	March 1974
2/18	JSC Specification Contamination Control Requirements for the Space Shuttle Program	March 1974
2/19	Rockwell International Implementation Report of the Manned Spacecraft Criteria and Standards (JSCM 8080, Change 5), for the Space Shuttle Observer	December 15, 1974
2/20	JSC Memo on Shuttle Payload Parts Inspection Sampling (Photocopy)	September 23, 1975
2/21	JSC Orbiter Project Management Manual	October 7, 1976

2/22	Rockwell International Implementation Report of the Manned Spacecraft Criteria and Standards (JSCM 8080, Change 7), for the Space Shuttle Observer	December 15, 1976
2/23	JSC Space Shuttle Program Specification: Space Shuttle Fluid Procurement and Use Control (Revision C)	February 14, 1977
2/24	Miscellaneous Presentation Slides and Documents: Orbiter Contamination Concerns	September 27, 1979
2/25	JSC Shuttle Orbiter Payload Safety Status Information for STS Payload Safety Review Panel	March 1980
2/26	JSC Procedure for SR&QA Participation in Orbiter and GFE Design and Hardware Milestone Reviews	March 1982
2/27	Briggs' Original Quality Assurance Audit Methods File	1982, undated
2/28	JSC Interpretations of STS Payload Safety Requirements	February 1983
2/29	JSC Space Shuttle Quality Assurance Documents	March 1983
2/30	JSC Implementation Procedure for STS Payloads System Safety Requirements	May 16, 1983
2/31	Rockwell International Shuttle Orbiter Division Product Quality Assessments Evaluation Guidelines	February 1984
2/32	NASA JSC Contractors Engineering Support Services Consolidation Quality Assurance Draft Statement of Work	February 1986
2/33	National Space Transportation System: Failure Modes and Effects Analysis and Critical Items List Manuals	October 1986, November 1989
2/34	National Space Transportation System: Methodology for Conduct of NSTS Hazard Analyses	May 20, 1987
2/35	Space Shuttle Payload Design and Development: Safety Guidelines and Requirements (Revision D)	September 1988
2/36	JSC Safety, Reliability, and Quality Assurance, Phase I and II, Training Manual Binder (Part 1)	1988-1990
2/37	JSC Safety, Reliability, and Quality Assurance, Phase I and II, Training Manual Binder (Part 2)	1988-1990

2/38	Safety Policy and Requirements: For Payloads Using the Space Transportation System	January 1989
2/39	Interpretations of NSTS Payload Safety Requirements (Revision A)	April 1989
2/40	Rockwell International Shuttle Avionics Integration Laboratory (SAIL) Safety, Reliability and Quality Assurance Support Plan	October 1, 1989
3/1	Shuttle Orbiter Failure Modes and Fault Tolerances for Interface Services (Part 1, Revision B)	November 1989
3/2	Implementation Procedure for NSTS Payloads System Safety Requirements (Revision B)	November 1989
3/3	NSTS Payloads Safety Requirements Manuals	1989

Series VI: Space Station Quality Assurance Records

Series VI consists of handbooks, contracts, reports, presentation slides, plans, documents, and miscellaneous materials, created or accumulated by Harry Briggs while he was working for NASA Johnson Space Center. The materials related to the quality assurance and quality control program for the planning of a United States Space Station, including the development of Space Station Freedom, mostly dated between 1983 and 1990. There are original copies of the 1967 contracts between the NASA Manned Spacecraft Center and McDonnell Douglas Corporation for the development and testing of a future space station. Most of the records relate to contracts and quality assurance standards for the NASA contractors McDonnell Douglas Corporation and Lockheed in their roles planning the development of a future American Space Station. The design contracts specifically contain a lot of technical information related to quality control standards developed and edited by Harry Briggs.

Box/Folder	Description	Date
3/4	MSC and McDonnell Douglas Corporation Space Station Design, Development, Test, and Evaluation Contract NAS-9-18200 (Part 1)	December 1967
3/5	MSC and McDonnell Douglas Corporation Space Station Design, Development, Test, and Evaluation Contract NAS-9-18200 (Part 2)	December 1967
3/6	JSC Reliability Division Presentation: Long-Life Assurance for Space Station	October 28, 1983

3/7	SRM&QA: Space Station Data Requirements for Development Phase	June 18, 1984
3/8	JSC Review of the Space Station Program Design Criteria and Practices Document	March 8, 1985
3/9	JSC Space Station Reference Configuration	April 1985
3/10	JSC Presentation Slides: Reliability-Maintainability Numerical Design Goals for Space Station	April 1985
3/11	Space Station Projects Requirements Document (Revision C)	March 6, 1987
3/12	NASA JSC Clarke Covington's Briefing on Space Station Projects to National Research Council Committee on Space Station	May 22, 1987
3/13	JSC Request for McDonnell Douglas Revised Proposal for Space Station Work Package 2 Design, Development, Test and Evaluation, Contract	March 11, 1988
3/14	Space Station Program Definition and Requirements, Section 9: Product Assurance Requirements (Revision A)	March 18, 1988
3/15	Space Station Projects Description and Requirements Document—Volume 4: Product Assurance Requirements	June 23, 1989
3/16	Lockheed Space Station Freedom Program Acronym List	December 18, 1989
3/17	Space Station Integration and SR&QA Management Plan	1989, undated
3/18	Space Station Program Requirements—Section 9: Product Assurance Requirements (Revision C) with Changes	March 15, 1990
3/19	NASA Space Station Freedom Office Space Station Program Requirements Section 9: Product Assurance Requirements (Revision C)	March 15, 1990
3/20	McDonnell Douglas Space Station Technical Direction: Contract PDR Resource Board Implementation	September 1990
3/21	McDonnell Douglas Space Station WP2 Integrated Systems Description Document	October 12, 1990

Series VII: Miscellaneous Quality Assurance Records

Series VII consists of training manuals, handbooks, workbooks, papers, reports, binders, presentations, notes, documents, and miscellaneous materials, related to the quality assurance and quality control engineering field that were created and/or collected by Harry Briggs during his NASA career between 1966 and 1998. A lot of the materials are general quality assurance manuals and specifications from NASA Johnson Space Center, as well as those Briggs collected for research purposes from numerous NASA contractors like North American Rockwell and 3M. The series provides a valuable collection of records showing the progression of aerospace quality assurance and control in engineering from its early days in the 1960s through the 1990s, and provides Briggs' own research materials that he used to generate the official Quality Assurance Office standards at NASA Johnson Space Center that would be used for the Space Shuttle Program.

Box/Folder	Description	Date
3/22	American Society for Quality Control, Philadelphia Section, Tenth Annual Quality Control Methods and Management Symposium Transactions	November 1966
3/23	Grumman Aircraft LM Electrical Installation Handbook	March 1968
3/24	North American Aviation Space Division Quality Standards Volume I, Book 2: Crimping Pocket Manual	August 15, 1968
3/25	MSC Management Manual: Reliability and Quality Assurance Plan	September 1969
3/26	North American Aviation Quality Standards Volume III, Book I: Structural Fabrication Pocket Manual	June 15, 1970
3/27	MSC Selection of Quality Assurance Provisions Manual	July 1970
3/28	North American Rockwell Space Division Quality Standards Volume I, Book 3: Soldering Pocket Manual	June 15, 1971
3/29	North American Rockwell Space Division Quality Standards: Contamination Control Manual	September 1, 1971
3/30	Fourth Space Rescue Symposium: Survey of Space Flight Safety Systems Paper	September 1971
3/31	MSC Guidelines for Establishing Safety Requirements for Space Flight Contractors	July 1972

3/32	Miscellaneous Briggs Quality Assurance and Contractor Documents	1973, 1975, 1982-1986, 1988
3/33	JSC Measurement Standards and Calibration Laboratory: Metrology Operation Procedures, Volume 1 (Revision A)	November 1974
3/34	Stanley Raeihle's Grumman Letter and Study Paper of Redundant Systems for Quality Assurance	November 1975, undated
3/35	Miscellaneous Briggs' SR&QA Records	1970s-1980s
3/36	JSC Instructions for Preparation of Hazard Analysis for JSC Ground Operations (Revision A)	September 1982
3/37	JSC Quality Assurance Procedure for Conducting Supplier Planning/Inspection Reviews	April 13, 1983
3/38	JSC Procedures for Problem Reporting and Corrective Action (Revision D)	July 1985
3/39	NASA JSC Training Course Manuals for Quality Assurance and Review of Engineering Drawings	1985
3/40	3M Quality Assurance Program Materials	1985, undated
4/1	JSC Engineering Support Services Consolidation Contract Draft Statement	February 1986
4/2	JSC Quality Assurance Manual Binder	October 21, 1987
4/3	JSC SR&QA Review of Changes to NHB 5300.4 (ID-2)	January 1988, undated
4/4	Miscellaneous Compliance and Quality Assurance Presentation Slides	January 1988, undated
4/5	Lockheed Engineering Executive Briefing Presentation Slides: NASA Excellence Award for Quality and Productivity	October 16, 1989
4/6	Miscellaneous JSC Quality Assurance Memos and Documents	1980s
4/7	JSC and Boeing Aerospace SR&QA Support Services Contract Solicitation (Work Copy)	[1980s]

4/8	NASA Electrostatic Discharge (ESD) Control Information Manual, Volume 1	1980s
4/9	NASA Electrostatic Discharge (ESD) Control Information Manual, Volume 2	1980s
4/10	NASA JSC System Safety Manual Binder (Part 1)	1980s
4/11	NASA JSC System Safety Manual Binder (Part 2)	1980s
4/12	Quality Assurance Review of Engineering Drawings Training Course	[circa 1980s]
4/13	JSC and Ford Aerospace SRM&QA Support Services Contract	January 31, 1990
4/14	Martin Marietta Space Systems Total Quality Management Implementation Plan—1990	January 1990
4/15	Ford Aerospace SRM&QA Support Contract Phone Book	May 8, 1990
4/16	Total Quality Management Workshop for the JSC TQM Implementation Working Group Slides Printouts (2 versions)	May 8, 1990
4/17	JSC-Eagle Engineering Subcontracting Draft with Briggs' Notes	September 20, 1990
4/18	Harry Briggs' Eagle Engineering Quality Assurance Binder 1	1990-1991
4/19	Harry Briggs' Eagle Engineering Quality Assurance Binder 2	1991
4/20	Briggs' Eagle Presentation Slides: Proposal to MDSSC for Assistance in Quality Assurance	August 1991
4/21	JSC Flammability Configuration Analysis for Spacecraft Applications	October 1998
4/22	NASA Manned Spacecraft Center Criteria and Standards Binder	1963-1985
4/23	Briggs' Quality Assurance Contract Delegation Guidelines File	1984-1985, 1987 undated

4/24	Grumman Aerospace Quality Control Manual Binder (Part 1)	Various dates
4/25	Grumman Aerospace Quality Control Manual Binder (Part 2)	Various dates
4/26	Source Evaluation Plan for Safety, Reliability, and Quality Assurance	Undated
4/27	JSC Contract Solicitation to Boeing for Safety, Reliability, and Quality Assurance Support Services	Undated
4/28	Ford Aerospace: Briggs' Notes for SR&QA Bid	Undated

Series VIII: Miscellaneous Materials

Series VIII consists of manuals, memorandums, handouts, presentation slides, booklets, telephone directories, and miscellaneous materials, created or accumulated by Harry Briggs while he was working for NASA Johnson Space Center between 1963 and 1990, that did not fit within other series of this collection. Some of the more interesting items in the series include official NASA memos on future space programs from 1969 and 1972; a NASA promotional booklet on Skylab 4; and Briggs' Boeing Houston Office and Ford Aerospace Houston Office telephone directories from 1989 and 1990, respectively.

Box/Folder	Description	Date
4/29	Air Force Systems Command Manual Quality Control: Procurement Quality Assurance Program Manual (Briggs Copy)	July 1, 1963
4/30	NASA Future Space Programs Memo	1969, 1972
5/1	MSC Contamination Control Program Requirements Manual, Volume 1	September 1970
5/2	JSC MSC Metrology Requirements Manual	November 1970
5/3	Martin Marietta Skylab Promotional Fold-Out Handout	circa 1970
5/4	Grumman Presentation Slides: How Do We Manage Manpower (with Notes)	May 16, 1972
5/5	MSC Space Systems Operational Design Criteria Manual	August 1, 1972
5/6	Miscellaneous Space Shuttle and Spacelab Promotional Brochures and Pamphlets	1972, undated

5/7	NASA Manned Flight Awareness Booklet: Skylab 4— Third Manned Mission for America’s First Space Station	1973
5/8	JSC Specification: Environmental Acceptance Testing Manual	September 1975
5/9	Rockwell International “ASTP: a meeting space...” Promotional Handout	[1970s]
5/10	Rockwell International Information Requirements Document for Design, Development, Test and Evaluation (DDT&E) Binder	March 20, 1981
5/11	JSC Engineering Drawing System Manual	September 1982
5/12	NASA Headquarters Office of Chief Engineer Training Course: Electrostatic Discharge Control	1982
5/13	Boeing Houston Office Telephone Directory	August 1989
5/14	Rockwell International Commitment and Teamwork for Sustained Improvements Document	October 24, 1989
5/15	Ford Aerospace Houston Office SISO Telephone Directory (Photocopy)	June 1990
5/16	Electrostatic Discharge Control Requirements Manual (Coordination Draft)	Undated