

FINDING AID FOR THE JOE D. GAMBLE PAPERS, 1969-1995 (#2018-0005)

Contact Information

University of Houston-Clear Lake Archives
Neumann Library
2700 Bay Area Blvd.
Houston TX 77058
Phone: 281-283-3936
Email: archives@uhcl.edu
URL: www.uhcl.edu/library

Abstract

The Joe D. Gamble Papers is composed of original materials Joe D. Gamble gathered from his personal work files while employed at the NASA Johnson Space Center in Houston, Texas, from his time working there between around 1963 and 1993. Most of the material in this collection is from his time as the Chief Engineer for the Assured Crew Return Vehicle (ACRV) Program, that began under the Space Station Freedom (SSF) Program and then transitioned to the International Space Station (ISS) Program. It covers his work with the Soviet Union on the use by NASA of the use of a modified Russian Soyuz vehicle for the Space Station rescue vehicle.

Repository (049): University Archives

Collection # (099): 2018-0005

Title (245): Joe D. Gamble Papers

Creator (100/110): Gamble, Joe D.

Inclusive Dates: 1969-1995

Bulk Dates: 1969-1995

Extent (300): 7 linear feet

Language (546): English

Administrative Information

Restrictions on Access (506): Some of the information and records in this collection are marked as "Government Sensitive" or "NPO Energia Proprietary", and is restricted from public access due to federal classification regulations and laws for classified or restricted NASA information. Only authorized researchers who have received federal approval for access from NASA in writing and submitted to the Associate Director of the UHCL Archives and Special Collections, are allowed access to the materials. Active NASA personnel with classified information clearances who present appropriate federal work identification may also be allowed access to the materials.

Restrictions on Use (540): Other than archival materials restricted from public access due to federal classification regulations and laws for classified or restricted NASA information, there are no restrictions on using this collection.

Acquisition Information (541): Personal donation of Joe Gamble in February 2014.

Processed by (583): Greg Blackburn of the NASA Alumni League
Johnson Space Center Chapter

Preferred Citation (524): Joe D. Gamble Papers (#2018-0005), University of Houston-Clear Lake Archives.

Biographical/Historical Note (545)

Joe D. Gamble received his BSCE and MSCE from Texas Tech University in 1962 and 1963, respectively. Following graduation, he accepted a position at the NASA Manned Spacecraft Center (later Johnson Space Center) in Houston, Texas. There, he was assigned to work with the group responsible for the aerodynamics and flight mechanics analysis for human spacecraft. Gamble supported the Gemini and Apollo Programs by performing simulations and analyses of the Apollo launch escape system and entry capsule. He developed a twelve degree of freedom computer simulation for analyzing parachutes and payloads, that was eventually used by NASA Langley Research Center in support of the Viking Mars missions.

Joe Gamble helped develop the aerodynamic requirements for the Space Shuttle Orbiter. He was a member of the team responsible for the development and verification of the Orbiter entry flight control system. He worked closely with the first four Space Shuttle crews during their training process; and was a member of the Johnson Space Center Mission Control Center's Aero team for the first four flights. Joe also served as a subsystems manager for the Space Shuttle Orbiter. Between 1986 and 1988, Gamble managed the aerocapture and landing portion of contracts with Martin Marietta, Lockheed Missiles and Space Corporation, and the NASA Jet Propulsion Laboratory, in support of a project intended to return a soil sample from Mars.

Between 1990 and 1993, Joe Gamble served as NASA's Chief Engineer for the Space Station Assured Crew Return Vehicle (ACRV) project, where he directed the efforts of 35 NASA engineers. As Chief Engineer, he managed the engineering portions of ACRV contracts with Rockwell International, Lockheed Missiles, and Space Corporation. After the U.S. government decided to use the Russian Soyuz vehicle for the Space Station rescue vehicle, Gamble managed the engineering support for the ACRV contract with RSC-Energia for a modified Soyuz vehicle that met NASA's requirements. During numerous visits to Moscow, he negotiated with the Russian managers regarding required modifications to the Soyuz vehicle. In December 1993, the ACRV project was absorbed into the International Space Station (ISS) Program.

In 1993, Joe Gamble retired from NASA. He accepted a position as a consultant with MEI Technologies in Houston, where he continued his support to the NASA Johnson Space Center. Even after retirement from NASA, Gamble continued to work with them by helping NASA's Orion Program develop a vehicle to transport astronauts to the space station and for deep space exploration. Additionally, Gamble was a member of the Guidance and Control Team for the Columbia Accident Investigation Board, performing simulations and analyses to reconstruct the probable vehicle dynamics during the loss of communications that occurred for approximately 30 seconds prior to vehicle breakup. The reconstructed dynamics scenario has been used for subsequent astronaut trainings.

Scope and Content (520)

The collection is composed of original materials Joe D. Gamble gathered from his personal work files while employed at the NASA Johnson Space Center in Houston, Texas, from his time working there between around 1963 and 1993. Most of the material in this collection is from his time as the Chief Engineer for the Assured Crew Return Vehicle (ACRV) Program, that began under the Space Station Freedom (SSF) Program and then transitioned to the International Space Station (ISS) Program. It covers his work with the Soviet Union on the use by NASA of the use of a modified Russian Soyuz vehicle for the Space Station rescue vehicle.

Many of the series' sections noted in this collection were as organized by Gamble, and the original order of the materials was retained during organization of the collection. Of note, some of this information is marked as "Government Sensitive" or "NPO Energia Proprietary", and is restricted from public access due to federal classification regulations and laws for NASA information. In addition to the ACRV files, Gamble also included technical performance information regarding four drop tests of the 0.10 scale fixed straight wing space shuttle model done at Fort Hood and the White Sands Missile Range in 1970.

Arrangement (351)

The collection is arranged in 31 series based on Joe Gamble's original records organization, with each the series having the materials organized within them chronologically.

Index Terms (6xx):

Personal Names

Andy Petro
Brian Kelly
Chris Cerimele
Claude Graves
Dick Kohrs
James Schornick
Jerry Craig
Robert Meyerson
Shelby Lawson
Sonya Sepahban
Tim Crull

Corporate Names

Johnson Space Center (JSC)
National Aeronautics and Space Administration (NASA)
NPO Energia
Russian Space Agency (RSA)

Subjects

Apollo-Soyuz Test Program (ASTP)
Assured Crew Return Vehicle (ACRV)
Crew Transport Vehicle (CTV)
Drop Test Program for 0.10 Scale Model of Fixed Wing Space Shuttle
International Space Station (ISS)
International Space Station Alpha (ISSA)
National Space Transportation System (NSTS)
Russian Soyuz Space Vehicle
Space Shuttle Program
Space Station Freedom (SSF)
Station Crew Return Alternative Module (SCRAM)

Document Types

Publications
Personal Papers
Memos
Reports
Protocols/Minutes
Photographs
Personal notes

Newspaper Clippings
Magazine Articles

Places

Fort Hood
Houston
JSC (Johnson Space Center)
Moscow
WSMR (White Sands Missile Range)

Collection Inventory

Box	Folder	Title	Date
		Series I: Early USSR Info (1972 – 1992)	
1	1	Research on USSR Spacecraft	May 31, 1972 – January 27, 1992
1	2	USSR Trip Reports	December 8, 1989 – August 20, 1990
1	3	Soyuz TM Manned Transport Spacecraft – NPO Energia	1990
1	4	Trip by ACRV Personnel to view Soyuz Vehicle at Ft Worth Science and History Museum	December 12, 1991
1	5	Miscellaneous communications	February 19, 1992 – April 13, 1992 -
1	6	Soyuz TM Type ACRV for Freedom Space Station	March 27, 1992
1	7	Possible Use of Soyuz-TM Spacecraft to Rescue Crew of Freedom Station	March 1992
1	8	General Concepts of Crew Rescue System for Space Transportation Systems and Orbiting Station (Severin/USSR)	Undated
		Series II: JSC In-House ACRV Design (1991 – 1992)	
1	9	JSC ACRV 8-Crew SCRAM Model Diagram	March 27, 1991
1	10	JSC ACRV 8-Crew SCRAM Configuration Review	April 3, 1991
1	11	Major Tests and Simulations	May 1991
1	12	ACRV Technical Presentation to A Aldridge	November 7, 1991
1	13	JSC ACRV 8-Crew SCRAM Configuration Review ESA/ACRV Technical Meeting	March 10, 1992
		Series III: Background Info Regarding First NASA Meeting with NPO Energia on using Soyuz (1991-1992)	
1	14	Current Events (Newspaper Clippings, Magazine Articles)	August 1991 – March 1992
1	15	NASA JSC Internal Memos on use of Soviet Space Hardware	September 4, 1991 – July 14, 1992
1	16	NASA HQ and Congressional Memos on Use of Soviet Space Hardware	October 23, 1991 – March 13, 1992
1	17	Assured Crew Return Vehicle (ACRV) Project Office Reports and Analyses	November 18, 1991 – May 29, 1992
1	18	Personal Notes of Gamble prior to first meeting with Russians	January 29, 1992 – February 14, 1992
1	19	Russian Statement on Possible use of Soyuz-TM Spacecraft to Rescue Crew of Freedom Station	March 5, 1992
2	1	NASA-NPO Energia Technical Discussions – Planning Meeting	March, 1992
2	2	April Meeting on Russian Trip	April 1, 1992 –

			April 2, 1992
		Series IV: First NASA Meeting with NPO Energia (1992)	
2	3	ACRV Project Pre Russian Meeting Analysis and Plans	March 1992
2	4	Personal Notes of Gamble – March 1992 Meeting with Russians	March 20-23, 1992
2	5	Protocol Statement of Meeting between NPO Energia and NASA delegations	March 23, 1992
2	6	ACRV Project Office Post Russian Meeting Analysis and Plans	April 1992 – June 1, 1992
2	7	NPO Energia Soyuz Documentation	April 3, 1992
		Series V: NASA/NPO Energia Technical Interchange Meeting (August 1992)	
2	8	Preparation for August 1992 Russian Meeting	June 1, 1992 – August 13, 1992
2	9	Personal Notes of Gamble – August 1992 Meeting with Russians	August 16, 1992
2	10	NASA/NPO Energia Meeting Agenda (August 1992)	August 17-21, 1992
2	11	Post August 1992 Russian Meeting Minutes, Notes, Analyses, and Plans	August 25, 1992 – September 9, 1992
3	1	Transmittal of Report: The results of investigations into “Soyuz TM” spacecraft flying service life increase up to 1 year	October 5, 1992
3	2	Response to Action regarding Service Life and reuse of the Soyuz as an ACRV	Undated
3	3	Response to Action regarding landing site locations	Undated
3	4	Miscellaneous notes and info on Soyuz systems	Undated
3	5	Gamble Personal Notes from August TIM Protocol	Undated
		Series VI: NASA/NPO Energia Technical Interchange Meeting (October 1992)	
3	6	Task 2 – Energia Report Soyuz TM Spacecraft	October 6, 1992
3	7	Task 2 – Energia Report Description of the Soyuz TM Transportation Spacecraft Motion Control System	October 8, 1992 – October 27, 1992
3	8	Task 6 – Energia Report Soyuz TM Spacecraft Landing Accuracy	October 15, 1992
3	9	Soyuz Pyrotechnics Data Requirements	October 15, 1992
3	10	Personal Notes of Gamble and travel guidance – October 1992 Meeting with Russians	October 19, 1992
3	11	Task 5 Debrief Material	October 28, 1992
3	12	Miscellaneous Russian Vehicle Information	Undated
		Series VII: NASA/NPO Energia Technical Interchange Meeting (December 1992)	
3	13	Personal Notes of Gamble – December 1992 Meeting with Russians	November 13, 1992 – December 9, 1992
3	14	Assessments of Soyuz Data for December 1992 Meeting	November, 1992
3	15	Response Action on Multiple Soyuz Capsule Usage	November 10, 1992
3	16	Design Panel Preliminary Notes from Discussions with NPO Energia	December 4, 1992
3	17	Discussion on Soyuz ACRV use without space suit and hydrogen peroxide and pyrotechnic issues	December 4, 1992
3	18	Protocol (Minutes) from Discussions with NPO Energia on use of Soyuz as Interim ACRV (November 30 – December 11, 1992)	December 14, 1992

4	1	Contract Direction on Technical Analysis/Phase B Study Tasks	January 5, 1993
4	2	Soyuz ACRV Phase B NPO-Energia Statement of Work Estimates	February 10, 1993
4	3	ACRV Soyuz Cost Estimates	March 19, 1993
4	4	Soyuz/ACRV Evaluation for Dick Kohrs	Undated
4	5	Space Shuttle/Soyuz Interface Minutes	Undated
4	6	Miscellaneous Notes and Info for December 1992 Meeting with Russians	Undated
		Series VIII: NASA/NPO Energia Technical Interchange Meeting (June 1993)	
4	7	Personal Notes of Gamble – February, March, and June 1993 Meetings with NPOE	February 19, 1993 – June 11, 1993
4	8	Memo: Soyuz ACRV Inputs to the JSC Redesign Team Activity	April 21, 1993
4	9	ACRV Project Control Board Documentation	May 27, 1993 – June 21, 1993
4	10	Preparation for June 1993 Russian Meeting	May 1993 – Early June 1993
4	11	Time of Soyuz-ACRV SS to SSF Transfer and Activation	June 1, 1993
4	12	NASA/NPO Energia Technical Interchange Meeting (TIM #) June 1-12, 1993 Protocol	June 1, 1993 – June 12, 1993
4	13	Summary of the Space Station Freedom Communications and Tracking System	June 9, 1993
4	14	Meteoroid and Orbital Debris Tutorial	June 10, 1993
4	15	TIM #4 Status Briefing to Associate Administrator for Space Systems Development	June 11, 1993
4	16	Assessment of Providing Return Capability of Soyuz in the STS	June 11, 1993
4	17	Summaries of June 1993 Russian Meetings	June 7, 1993 – June 18, 1993
4	18	Miscellaneous notes and info on Soyuz systems (in Russian)	Undated
4	19	Structure Scheme of NPO Energia	Undated
		Series IX: NASA/NPO Energia Preliminary Requirements Review (1993)	
4	20	NASA/NPO Energia Preliminary Requirements Review (PRR) Protocol Minutes	August 23, 1993 – September 2, 1993
4	21	Gamble Personal Notes on ACRV PRR and Delta PRR	August 1993 – September 1993
4	22	NASA Delta PRR Presentation: Soyuz Description	September 28, 1993
		Series X: NASA/NPO Energia Technical Interchange Meeting (October 1993)	
5	1	Pre October 1993 TIM Notes and Correspondence	September 1993
5	2	Cable Prototype Data Transmission Lines according to GOST 26765.52-87 (MIL-STD-1553B)	September 20, 1993
.5	3	NPO Energia Technical Information	October 4, 1993
5	4	NASA/NPO Energia Technical Interchange Meeting #6 Charts and Minutes	October 4-15, 1993
5	5	Gamble Personal Notes on October 93 TIM	October 4-15, 1993
5	6	Letter to NASA Participants in NPO Energia TIM #6	October 8, 1993
5	7	NASA/NPO-Energia ACRV TIM #6 Protocols	October 21, 1993
5	8	Miscellaneous Information	Undated

		Series XI: Configuration Review – Houston (December 1993)	
5	9	Study Plan on Soyuz ACRV for Freedom Space Station	June 5, 1993
5	10	Soyuz Spacecraft Technical Description – Draft	November, 1993
5	11	Pre December 1993 Meeting Notes and Correspondence	November 4, 1993 – November 30, 1993
5	12	Soyuz ACRV Configuration for the Freedom Station (CR Stage of Phase B)	November 18, 1993
5	13	General Information Primarily in Russian	November 19, 1993
6	1	Soyuz/ACRV Proposed Modifications	November 22, 1993 – December 16, 1993
6	2	Configuration Review and Report Memos	November, 24, 1993 – December 2, 1993
6	3	Meeting Agendas and Charts for December 1993 Meeting	December 6-16, 1993
6	4	Personal Notes of Gamble – December 1993 Meetings with NPOE	December 6-16, 1993
6	5	Protocols from December 1993 Meeting	December 12, 1993 – December 17, 1993
6	6	NPO Energia/NASA Configuration Review Final Review Agenda	December 16, 1993
6	7	Pyrotechnic Device Certification Data for NASA Review	Undated
		Series XII: ACRV Project Status Reviews (1990-1993)	
6	8	ACRV Status and Plans Briefing to OSF Associate Administrator (1990)	January 25, 1990
6	9	Phase A/B Preliminary Requirements Review (PRR) Results Presentation to Dr. Lenoir, NASA Associate Administrator for the Office of Space Flight	July 2, 1990
6	10	ACRV Presentations to JSC Director of Engineering	April 14, 1992 – March 5, 1993
6	11	ACRV Project Status Review for Space Station Freedom Director	August 14, 1992
6	12	Interim Soyuz ACRV Status Report to Staff, Senate Appropriations Subcommittee	September, 1992
7	1	ACRV Project Status Briefings to Associate Administrator for Space Systems Development	November 18, 1992 – December 9, 1992
7	2	ACRV Status Presentation to JSC Engineering Director Leonard Nicholson	July 1993
7	3	Soyuz ACRV Program Review for Associate Administrator – Dean Myers/QC	August 17, 1993
7	4	ACRV Status Review to John Aaron and Don Blevins	October 27, 1993
		Series XIII: Jerry Craig, Manager, ACRV Project Office Material and ACRV Weekly Staff Notes (1989 – 1992)	
7	5	ACRV Status and Info Briefings	March 30, 1989 – August 5, 1992
7	6	ACRV/SSF Integration Information	February 7, 1990 – April 10, 1991
7	7	ACRV Related Correspondence	June 22, 1990 – December 23, 1992

8	1	ACRV Staff Notes (Gamble)	June 25, 1990 – December 16, 1991
8	2	Augustine Report of the Advisory Committee of the Future of the US Space Program	December 10, 1990 – January 11, 1991
8	3	ACRV Status and Info Briefings	January 7, 1991 – October 16, 1991
8	4	ACRV Operational Availability Definition	February 12, 1991
8	5	ACRV Staff Notes (Gamble)	October 18, 1991 – November 23, 1992
8	6	Landing System Working Group Interview with Jerry Craig	November 21, 1991
8	7	NASA Memo: Response Action on Multiple Soyuz Capsule Usage	November 10, 1992
8	8	Miscellaneous ACRV Project Notes and Info	Undated
		Series XIV: Assured Crew Return Vehicle (ACRV) Project Office Information (1989-1993)	
8	9	ACRV Project Office Planning and Organization	February 13, 1989 – March 18, 1993
9	1	ACRV Project Office Budget and Schedule Information	1989 – January 26, 1993
9	2	ACRV Phase A Trades and Analyses	1990
9	3	Correspondence between Congressmen and NASA Administrator Truly	December 23, 1991 – January 14, 1992
9	4	Memo: Pressure Suite Guidelines for Conceptual Designs of Future Earth-to-Orbit Spacecraft	March 2, 1992
9	5	Statements of Work for Soyuz ACRV	March 24, 1992 – December 14, 1993
9	6	ACRV Contract Technical Direction	June 8, 1992
9	7	Soyuz ACRV Tasks – Draft	June 26, 1992
9	8	ACRV Project Integrated Schedules	June 26, 1992
9	9	Lockheed Collaboration with NPOE for a Soyuz TM Mockup	June 26, 1992 – May 26, 1993
9	10	ACRV Contract Correspondence (NASW-4727)	January 11, 1993 – November 8, 1993
9	11	Accommodation of Soyuz as an ACRV Briefing	March 25, 1993
9	12	NASA Memo: Transition of Soyuz ACRV Activities to the new Space Station Program Office	November 17, 1993
9	13	NASA Informal Note: Ops Concept for Joint Station	November 23, 1993
10	1	ACRV Engineering Directorate Support Budget Planning	1991 – 1993
10	2	Space Station Overrun Newspaper Articles	January 31, 1993 – February 1, 1993
10	3	Miscellaneous Project Office Items	Undated
		Series XV: Status with ET/Systems Engineering (SED) Division Chief (1990 – 1993)	
10	4	Early ACRV Engineering Planning Presentations	April 20, 1990 – August 20, 1990
10	5	Weekly Status Reports to ET/Systems Engineering Division (SED) Chief (Gamble)	May 14, 1990 – June 14, 1993
10	6	Various ET/Systems Engineering Division Weekly Activity Reports	June 20, 1990 – June 1, 1993
10	7	Miscellaneous communications and info provided to ET/Systems Engineering Division Chief	August 23, 1990 – December 2, 1992
10	8	ET/Systems Engineering Division Staff Notes (Gamble)	October 3, 1990 – June 22, 1993

11	1	ACRV Engineering Directorate Team Status Emails	September 30, 1991 – October 9, 1991
11	2	NASA Memo: SED FY91 Annual Report Outline	November 20, 1991
		Series XVI: Russian Contract Info after Space Station Freedom (1993-1995)	
11	3	Russian Vehicle Photos	1993
11	4	Phase B Statement of Work Soyuz ACRV	January 7, 1993
11	5	Minutes of Contract Discussions at NPOE March 19-25, 1993	March 19, 1993
11	6	ACRV General Correspondence with Engineering Personnel	January 13, 1993 – September 13, 1993
11	7	Approaches and Options for Soyuz TM Modifications for Space Station Freedom and ACRV Requirements	July 15, 1993
11	8	NPO Energia Formal Reports Received as of 10/13/93	October 13, 1993
11	9	Soyuz ACRV/Australian SAR Off Frequency Compatibility Test Plan	October 14, 1993
11	10	Soyuz ACRV Control Panels Neptune-M and DM Controls	October 28, 1993
11	11	Alpha Station Addendum to Program Implementation Plan	November 1, 1993
11	12	Russian Crew Transfer Vehicle (CTV) Contract Correspondence	November 15, 1993 – May 24, 1994
11	13	Miscellaneous Info on Soyuz Systems	November 1993
11	14	NPO-E Charts from Mir/Soyuz Mission Plan Meeting	December 7, 1993
11	15	Letter Contract between NASA and RSA Related to services for MIR-1 and the ISS	December 10, 1993
11	16	Medical Operations Position on Space Station Freedom Crew Evacuation Frequency	January 26, 1994
11	17	Summary of Soyuz CTV Requirements Meeting	February 16-17, 1994
11	18	Technical Goals and Contracting for a Soyuz-Based “Common” Crew Transport Vehicle (CTV)	April 27, 1994 – April 29, 1994
11	19	NASA/NPO-Energia Meeting Minutes for Feasibility study of a Common CTV versus a unique Soyuz-based Rescue Vehicle	March 17, 1994
11	20	Crew Transfer Vehicle (CTV) Requirements and Issues	May 19, 1994 – May 23, 1994
12	1	Soyuz Spacecraft – Technical Description	June 1994
12	2	Soyuz-TM Operations Databook Mission Operations Directorate	
12	3	ISS Alpha Integrated Russian Segment Orbital Segment Basic Requirements	Undated
12	4	Funding for the FGB Energy Block	Undated
		Series XVII: ACRV Flight Performance and Dynamics Working Group – Chris Cerimele/EG (1988 – 1993)	
12	5	ACRV Flight Performance and Dynamics Presentations	December 1988 – August 3, 1992
12	6	ACRV Flight Performance and Dynamics Working Group Status Reports	June 21, 1990 – November 22, 1993
12	7	ACRV Flight Performance and Dynamics Working Group Planning Info	July 1990 – August 3, 1992

12	8	ACRV Flight Performance and Dynamics Working Group Modeling Info	November 20, 1990 – April 15, 1991
13	1	ACRV Flight Performance and Dynamics Analysis Studies	August 20, 1992 – November 22, 1993
13	2	Miscellaneous Correspondence associated with Cerimele	July 9, 1991 – October 1, 1993
13	3	NASA/JSC Aeroscience Branch Brochure	Undated
		Series XVIII: ACRV Communication System Studies (1992)	
13	4	Memo: ACRV Communication & Tracking System Design – Station Crew Return Module Config	May 13, 1992
13	5	ACRV-ACRV Communication Issues Presentation	May 29, 1992
13	6	Personal Notes on Meeting with Communication and Tracking Division (EE)	September 1992
		Series XIX: Docking Concepts 1992 – Early 1993	
13	7	Docking System Presentations	October 17, 1991 – July 20, 1993
13	8	Communication Memos	October 15, 1992 – August 9, 1993
13	9	NPO Energia Contract Reports related to Docking	October 15, 1992 – October 27, 1992
13	10	Notes Regarding Docking Systems	November 6, 1992 – November 12, 1992
		Series XX: Brian Kelly – Landing and Recovery (1992)	
13	11	Presentations on Landing and Recovery	August 1992 – October 14, 1992
13	12	Landing and Recovery Task Definition and Comments	August 7, 1992 – October 9, 1992
13	13	Brian Kelly Correspondence	October 1, 1992 – October 15, 1992
13	14	Personal Notes on Meeting with Brian Kelly	October 14, 1992
13	15	Soyuz Landing Information from NPO Energia	October 22, 1992
		Series XXI: Expendable Launch Vehicle (ELV) Soyuz Delivery Discussions (1992)	
13	16	Presentations on ELV Delivery of Soyuz ACRV	October 8, 1992
13	17	Correspondence on Phase B ELV Activities	October 15, 1992
13	18	Summary of Automatic rendezvous and docking meeting in support of ELV Soyuz delivery	November 30, 1992
		Series XXII: Soyuz Systems Investigations (1992)	
13	19	Subsystem Questions and Analysis Reports	July 30, 1992 – October 15, 1992
13	20	Soyuz TM System Information	September 2, 1992
13	21	Correspondence with NASA team on Soyuz systems	September 4, 1992 – October 15, 1992
14	1	Personal Notes (Sept-Nov 1992)	September 14, 1992 – November 9, 1992
14	2	Thermal Working Group Presentations	September 21, 1992 – September 23, 1992
14	3	Gamble Russian Travel Receipts	October 1992

14	4	Description of the "Soyuz-TM" Mission Control Scheme and Structure of the Operations Group	October 5, 1992
14	5	General Technical Requirements for MIR Experiments and Equipment	October 16, 1992
14	6	NPO Energia – Organization of Group Work	October 22, 1992
14	7	Soyuz Propulsion System Information	October 27, 1992
14	8	Main Study Results on the User of the Soyuz TM Spacecraft as an ACRV for Space Station Freedom	November 20, 1992
14	9	Report on Russian Trip, October 17-29, 1992	November 27, 1992
14	10	Q&A from November 1992 Telecons with NPOE regarding Soyuz TM Systems	November 29, 1992
14	11	General Study Tasks for Design Panel	December 11, 1992
14	12	Technical Feasibility Study on Use of the Soyuz TM For the ACRV Missions	June 1993
14	13	NPO Energia October Data Submittal Audit Forms	Undated
		Series XXIII: ACRV Parachute Information (1963-1990)	
14	14	Earth-Landing Systems for Manned Spacecraft - Kiker/Lee/Hinson	April 1963
14	15	Application of Gliding Parachutes to the Space Station Crew Emergency Return Vehicle – JSC Engineering	December 1987
14	16	ACRV Typical Mission Sequence and Master Schedule	April 15, 1990
14	17	Parachute Related Correspondence	July 10, 1990 – November 13, 1990
14	18	Advanced Recovery System Study for the Next Generation Space Transportation System – MSFC	July 1990
14	19	Ram-Air Gliding Parachute System Performance– Discoverer – United Technologies	Undated
		Series XXIV: ACRV/Soyuz Landing Site and Opportunities Studies (1990-1993)	
14	20	ACRV/Soyuz Landing Site Studies – Tim Crull/McDonnell Douglas	July 12, 1990 – September 24, 1993
15	1	ACRV Support Task Planning	August 31, 1990 – March 11, 1992
15	2	Tim Crull/McDonald Douglas Related Correspondence	December 7, 1990 – October 2, 1992
15	3	Two-Way ACRV Landing Study – Michelle Munk/JSC Systems Engineering Division	December 10, 1991
15	4	ACRV-Soyuz Landing Opportunity Assessment for CONUS Site(s) – Eagle Technical Services	February 5, 1993
15	5	Soyuz TM – 16 Landing Observation Report	November 30, 1993
		Series XXV: Landing and Recovery Systems (1963-1992)	
15	6	Various pre-Apollo, Apollo, Skylab, ASTP (Apollo-Soyuz Test Program) Landing and Recovery Photographs	1963 – 1975
15	7	ACRV Landing and Recovery Studies and Background	December 1987 – January 17, 1992
15	8	Miscellaneous Landing and Recovery Meeting Notes and Information	May 4, 1990 – February 12, 1992
15	9	Landing System Correspondence	July 2, 1990 – June 29, 1992
15	10	Landing and Recovery Contract/Proposal Documentation	September 17, 1990 – April 6, 1992

15	11	Landing System Reports by Robert Meyerson	July 1991 – September 1992
15	12	“Crashware” by John Haliquist/Forbes Magazine	April 13, 1992
15	13	Report on the Soyuz TM Landing Equipment and its Performance Data	October 6, 1992
15	14	De-Orbit and Re-Entry Autonomous Guidance (DRAG) Proposal from Honeywell	Undated
		Series XXVI: ACRV Medical Branch Communication on allowable crew loads (1990-1991)	
15	15	Medical Branch Related Correspondence	November 28, 1990 – September 20, 1991
15	16	Personal notes on Medical Branch Meetings	March 15, 1991 – December 16, 1991
15	17	Effects of +Gx on Lung Injury as Related to CERV (ACRV) for Space Station – M. Barratt	July 11, 1991
15	18	Medical Branch Related Presentations on Crew Loads	August 29, 1991 – December 16, 1991
15	19	F-22 Cockpit System Specification for Biodynamic Response	December 20, 1991
		Series XXVII: ISS Mission Build Meeting Correspondence with James Schornick (1991-1992)	
15	20	ISS Mission Build (MB) Team Meeting Correspondence with James Schornick (1991-1992)	May 20, 1991 – September 8, 1992
		Series XXVIII: Meetings after ISS took over ACRV (1994-1995)	
16	1	Cargo Vehicle/Soyuz Data Products Meeting (Aug 1994)	August 15, 1994 – August 26, 1994
16	2	NASA/RSA Russian Segment IDR Meeting (Oct 1994)	October 13, 1994 – October 28, 1994
16	3	RSA/NASA Integration Near Term Schedule	November 15, 1994
16	4	NASA ISSA Crew Rotation Assessment	November 16, 1994
16	5	NASA Review of RVE-23, Interface Control Documents Part1	December 6, 1994
16	6	McDonnell Douglas Post Assembly Complete (AC) ISSA Altitude Strategy	December 16, 1994
16	7	Meeting Minutes with NPOE after ISS Took over ACRV	January 10, 1995 – March 17, 1995
16	8	Data on the Progress-M2 Propulsion System	January 30, 1995
16	9	Personal Notes of Gamble – TIM #14 Meeting with NPOE (Feb 1995)	February 2, 1995 – February 8, 1995
16	10	Soyuz Power Estimates History	February 4, 1995
16	11	Soyuz/Progress Data Book	October 20, 1995
16	12	Russian Muscle and Bon System Loading Suit	Undated
16	13	Mass Properties Table from RSA and Select ISSA Assembly Sequence Drawings	Undated
16	14	Biomedical Results of Skylab	Undated
16	15	Progress-M Loss of Communication Period Impact on Debris Avoidance Operations	Undated
		Series XXIX: Rockwell/John Ripley ACRV Information (1992)	
16	16	Rockwell ACRV Team Reports and Analyses	January 15, 1992 – March 9, 1992

16	17	Personal Notes from Rockwell Meetings	January 30, 1992 – July 15, 1992
16	18	Rockwell ARCV Contract Information	February 18, 1992 – June 30, 1992
		Series XXX: Testing Program for 0.10 Scale Model of Fixed Straight Wing Space Shuttle (1970)	
17	1	0.01 Scale Space Shuttle Model Drop Test Correspondence	October 24, 1969 – February 4, 1971
17	2	0.10 Scale Documentation and Correspondence	December 12, 1969 – August 11, 1970
17	3	Preflight Transition Trajectory Analysis for 0.10 Scale Model of a Fixed Straight Wing Reusable Space Shuttle	March 18, 1970
17	4	0.10 Scale Fort Hood Drop Test	May 4, 1970
17	5	0.10 Scale WSMR (White Sands Missile Range) Drop # 01 12K Drop Altitude	May 27, 1970
17	6	0.10 Scale WSMR Drop # 02 14K Drop Altitude	June 9, 1970
17	7	0.10 Scale WSMR Drop # 03 14K Drop Altitude	June 17, 1970
17	8	0.10 Scale Space Shuttle Model Drop Test Newspaper clippings and photos	May 20, 1970 – June 30, 1970
18	1	Results of Free-Fight Subsonic Transition Tests on a 1/10 Scale MSC 242 Orbiter Shuttlecraft Model	November 27, 1970
18	2	8% Model Documentation of Shuttle Craft	September 12, 1969 – February 8, 1971
18	3	Random photo of a EVA suited crewmember on a motorcycle	Undated
		Series XXXI: Background Information	
18	4	Donation Acquisition Form and Personal Background Info	February 19, 2014