

CENTER SERIES

DOCKING AND RENDEZVOUS

This subseries consists of documents related to the design and operation of orbital docking mechanisms for spacecraft rendezvous. This includes correspondence, contractor reports, design notes, and other materials related to Apollo, Skylab, Space Shuttle, and Space Station docking technology. In addition, the subseries includes information on international docking systems (with emphasis on the Soviet Salyut spacecraft). Of particular interest is a large group of materials from the early 1960's on the subject of Lunar Orbital Rendezvous. They originate with the papers of John C. Houbolt, D. Brainerd Holmes, and John Eggleston. The documents are dated from 1960 through 1988 and were collected by Mark Clark in the course of research for a historical thesis on docking technology. (A copy of the completed paper is included in the series.) Material is arranged chronologically. Reports are filed separately from the correspondence.

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	Correspondence	1949, 1951, 1960 - 1963
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	Studies Related to Lunar and Planetary Missions by the Lunar Trajectory Group of the Theoretical Mechanics Division	May 26, 1960
	The Trajectories and Some Practical Guidance Considerations for Rendezvous and Return	January 25, 1961
	MSFC - Orbital Docking and Operations Program MTP-M-FPO	February 17, 1961
	Preliminary Study of a Piloted Rendezvous Operation from the Lunar Surface to an Orbiting Space Vehicle	February 21, 1961
	Extensions of Optimum Time to Rendezvous Studies	February 28, 1961
	Least Fuel, Least Energy and Salvo Rendezvous	April 13, 1961
	Problems and Potentialities of Space Rendezvous	June 21, 1961
	Analytical Evaluation of a Method of Midcourse Guidance for Rendezvous with Earth Satellites	June 1961
	Manned Lunar Landing Through Use of Lunar Orbit Rendezvous, Volume I and II	October 31, 1961
	Charts and Diagrams Re: Lunar Orbit Rendezvous	1961
	A Study of the Positions and Velocities of a Space Station and a Ferry Vehicle During Rendezvous and Return	1961
	A Study of the Optimum Velocity	February 1962

SubHeading:	Change to Intercept and Rendezvous	
	Briefing on Research on Lunar Orbit Rendezvous for NASA Headquarters and Chance Vought Personnel	March 29, 1962
	Lunar Orbit Rendezvous and Manned Lunar Landing	April 1962
	Lunar Orbit Rendezvous News Conference on Apollo Plans at NASA Headquarters	July 11, 1962
	Lunar Orbital Rendezvous for Apollo	July 17, 1962
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	Columbus Division - Closing Letter on the NASA Docking Study (including diagrams)	January 28, 1963
	Lunar Rendezvous (with related memos)	February 1963
	American Machine and Foundry Proposal for Experimental Test Equipment for Probe and Drogue Parameters	March 18, 1963
	McDonnell Aircraft Corporation Structural Dynamics Project Note Gemini-Agena Six Degree-of-Freedom Docking Response Study	March 1963
	Apollo Docking Study	May 16, 1963
	Preliminary Study of the Pilot - Controlled LEM Docking Maneuver, Project Apollo Working Paper No. 1075	May 24, 1963
	A Simulation Study of the LEM Docking Maneuver Using a Minimum Impulse Control Mode, Apollo Working Paper No. 1082	July 24, 1963
	A Short History of the Development of the Lunar Orbit Rendezvous Plan at the Langley Research Center	September 6, 1963
	Apollo Docking Mechanism Photographs and Drawings	1963
	Gemini Agena Target Vehicle Familiarization Manual Target Docking Adaptor	April 1, 1964
	An Analog Simulation Study of the Tether Concept of Apollo Docking Control	April 15, 1964
	MSC Internal Note No. 64-ET-35 Preliminary Design of Ring and Cone Docking Mechanism	July 8, 1964
	Briefing on Orbital Mechanics of Rendezvous Missions	October 15, 1965
	Fairchild Hiller, Airlock Presentation	January 26, 1966
	Boeing Scientific Research Electrical Hazards of Docking in Space	April 1966
	An Assessment of Rendezvous Accomplishments	January 1967
	Apollo Rendezvous with Command Module Active	August 16, 1967
	Jasinski, R.B. and E.H. Mertz, Gemini Rendezvous Braking Maneuvers	c. December 31, 1967
	Institute for Machine Technology / USSR Docking - Mechanism Attenuator with Electromechanical Damper	June 1970
	NASA Technical Translation - A Brief Description of the Radio Equipment Used for Rendezvous by Soyuz Type Spacecraft	December 1970
	USSR / US Docking Studies	January 5, 1971

	A Concept for a USSR/USA Rendezvous and Docking Mission	February 2, 1971
	North American Rockwell - The Neuter Docking System	September 9, 1971
	A Docking System for Future Spacecraft	October 29, 1971
	A Docking Mechanism for Apollo / Salyut Type Spacecraft	November 17, 1971
	English Translation of Five Papers Concerning Compatible Rendezvous and Docking Systems Received from USSR Delegation in Moscow	November 29, 1971
	U.S. / U.S.S.R. Compatibility Docking Study	Nov. 26 - Dec. 9, 1971
	Martin Marietta Corp. Preliminary Design of a Shuttle Docking and Cargo Handling System	December 1971
SubHeading:	Box Number: 5	
	Grumman -Study Requirements for ASSY and Docking of Spacecraft in Earth Orbit, vols. 1-4 and Final Briefing	April 1972
	Convair Aerospace Shuttle / RAM Deployment Mechanism Conceptual Design - RAM Phase B Study Special Task	June 1, 1972
	NASA Technical Translation - Draft of Technical Proposals for the Experimental "Soyuz-Apollo" Flight	June 1972
	Neuter Docking Mechanism Study	June 1972
	Docking Devices for Soyuz-Type Spacecraft	June 1972
	Requirements Specification for Advance Mission Docking System	June 1972
	Rockwell, CSM / Advanced Mission Docking System, Vol. II	June 1972
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	Rockwell, CSM / Advanced Mission Docking System, Vol. III - V (7 books)	June 1972
	ASTP Test Plan for Scale Models of Apollo / Soyuz Docking System	October 17, 1972
	Docking System of Androgynous and Peripheral Type	November 1972
	Materials on Interacting Elements	December 1972
	ASTP Advanced Mission Docking System Minutes and Presentations	1972
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	Status of US/USSR Negotiations of Compatible Rendezvous and Docking Systems for Future Spacecraft	January 18, 1973
	Skylab News Reference. Multiple Docking Adapter and Experiments	May 1973
	Bibliography of Publications Pertaining to Rendezvous Mission Simulator	June 1973
	Engineering Principles to Assure Compatible Docking Between Future Spacecraft of USA and USSR	July 27, 1973
	Shuttle Docking System Configuration / Weight Analysis	December 17, 1973
	ASTP Docking Module / Docking System Integrated Ground Support Equipment Test Configuration by Site (JSC-08820)	December 1973
	Docking System Design Relative to International Agreements and Shuttle	May 28, 1974

SubHeading:	Program	
	ASTP Command/Service Module and Docking Module Systems Handbook	August 1, 1974
	ASTP Command/Service Module and Docking Module Systems Handbook JSC-09085	February 20, 1975
	ASTP Apollo Soyuz Docking System Sequence of Docking and Undocking	May 1, 1975
	ASTP Command/Service Module and Docking Module Systems Handbook (Document Change 2)	June 20, 1975
	Apollo-Soyuz Test Project Docking System	July 1, 1976
	Requirements for Spacecraft Docking and Berthing	October 1983
	Space Station Operations Technology Construction / Docking Technology RTOP 506-64-27	December 1, 1983
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	Rockwell Docking and Berthing Systems Apollo, Soyuz, and Space Station	May 1984
	Space Station Berthing and Docking Studies	October 15, 1984
	Retrieval Latch "Pull-Force"	October 16, 1984
	Soft Docking Study Mechanical Design Activities	1984
	Module to Module Interface, Docking / Berthing	1984
	Space Station Operations, Construction / Docking Technology Study Summary 506-64-27	October 22, 1985
	Direction Sensitive Latch	December 18, 1985
	Automated Rendezvous Techniques - Soyuz Operations	May 1986
	Design of Orbital Docking Mechanisms at NASA: A History	May 1987
	International Spacecraft Docking Study	January 1988
	International Spacecraft Docking Study - A Report to Congress	April 1988
	Payload Installation and Deployment Aid for Space Shuttle Orbiter Spacecraft Remote Manipulator System	nd
	Neuter Docking System Briefing Charts	nd
	A Modular Docking Mechanism for In-Orbit Assembly and Spacecraft Servicing	nd
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	ASTP Docking System Housing Indent Briefing Charts	nd
	NASA Technical Note - The Preliminary Design of a Ring and Cone Docking Mechanism and the Related Post Contact Dynamic Analyses	nd
	MSC Docking System Design Briefing Charts	nd
	Reference - TextDBMS Database Runs	nd
	Reference - RECON Database Runs	nd
	Space Cooperation Bibliography	nd

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Apollo Docking Mechanism Test -
Photos

c. 1968