

FINDING AID FOR THE HERBERT C. KAVANAUGH PERSONAL PAPERS, 1942-1992 (#2016-0016)

Contact Information

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Descriptive Summary

Repository (049): University Archives

Collection # (099): 2016-0016

Title (245): Herbert C. Kavanaugh Personal Papers

Creator (100/110): Herbert C. Kavanaugh

Inclusive Dates: 1942-1992

Bulk Dates: 1961-1977

Extent (300): 10.5 linear feet (17 document cases and 1 flat box)

Language (546): English

Administrative Information

Restrictions on Access (506): none

Restrictions on Use (540): none

Acquisition Information (541): Materials originally donated by Herbert C. Kavanaugh on March 19, 2008; latest addenda donated November 2017.

Processed by (583): Erin Henry

Preferred Citation (524): Herbert C. Kavanaugh Personal Papers (#2016-0016), University of Houston-Clear Lake Archives.

Biographical/Historical Note (545)

Herb Kavanaugh graduated from Texas A&M University with a Bachelor's degree in Aeronautical Engineering and began his professional engineering career with General Dynamics in Fort Worth, Texas in 1959. After three years in the B-58 wing design group, Kavanaugh returned to Texas A&M to complete work on his Master of Science degree. Upon completion, he joined the National Aeronautics and Space Administration at Clear Lake, Texas as an Aerospace Engineer in the Structural Analysis Section of the Structural Mechanics Branch within the Structures and Mechanics Division.

His NASA career within the Structures and Mechanics Division spanned 28 years. It started with the early design phases of the Apollo program and ended while the Shuttle program was at its peak. While at NASA he served as an Engineering Specialist for the preparation and review of structural analysis of load bearing components and was responsible for the design, analysis, and evaluation of major structural subsystems for advanced spacecraft and for the Space Station Freedom. He was also a member of the preliminary design team for the Space Shuttle affectionately known as the "Skunk Works." During the Shuttle Program, Kavanaugh was responsible for the structural strength and life integrity certification of certain space vehicle subsystem components as well as the payloads and experiments that were to be carried by the Shuttle. He holds one group patent for the design of a Triangular Space Station Configuration and is a registered engineer in the state of Texas.

Scope and Content (520)

The collection contains 18 boxes of materials pertaining to the work of Herbert C. Kavanaugh from the period of 1942-1992. The collection includes personal letters, memoranda, technical reports, handbooks, journals, periodicals, numeric data, photographs, structural reports, and annual reports.

Arrangement

Folders are arranged chronologically within nineteen series: Correspondence & Accompanying Documents, Reports, Internal Notes, Technical Notes, Manuals & Handbooks, Standards, Periodicals, Assessments, Data, AIAA Papers, Conference Proceedings, Meeting Minutes, Presentations, Patents, Brochures, Oversize, Structural Reports, Annual Reports, and Handbooks.

Index Terms (6xx):

Personal Names

- Card, Michael F.
- Kavanaugh, Herbert C.
- McCombs, W.F.
- McQueen, J.C.
- Perry, J.L.

Corporate Names

- United States. National Aeronautics and Space Administration
- Rockwell International
- Convair
- Boeing, Incorporated.

Subjects

- Structural analysis (Engineering)
- Structural engineering
- Computer software—Development

Places

- Clear Lake (Tex.)

Document Types

- Letters
- Technical reports
- Memoranda
- Handbooks
- Journals
- Periodicals
- Numeric Data

Photographs

Items Separated

JSC Directories removed from Kavanaugh Addenda

Related Material (544)

Maxime "Max" Faget Papers, 1930s-2004 (#2014-0001)

Inventory

<u>Box</u>	<u>Folder</u>	<u>Title</u>	<u>Date</u>
1	1-3	Series I: Correspondence & Accompanying Documents Memoranda	1970-1992
	4	Memoranda	undated
	5	Selected Documents Used in the Design of Spacecraft (memo & enclosures) by Ralph Gatto	1965-1989
	6	Get-Away-Special Canister (GAS) memos & enclosures	1978-1990
	7	Personal Letters	undated
		Series II: Reports	
	8	NACA Advance Restricted Report (ARR): "The Strength and Stiffness of Shear Webs with and without Lightning Holes" by Paul Kuhn	Jun 1942
9	NACA Advance Restricted Report (ARR) 3K04: "Wartime Report – Charts for Calculation of the Critical Stress for Stability of Columns with I-, Z-, Channel, and Rectangular-Tube Section" by W.D. Droll, G.P. Fisher, and G.J. Heimerl	Nov 1943	
10	NACA Advance Restricted Report (ARR) 3K06: "Wartime Report – Principles of Moment Distribution Applied to Stability of Structures Composed of Bars or Plates" by E.E. Lundquist, E.Z. Stowell, & E.H. Schuette	Nov 1943	
11	NACA Advance Restricted Report (ARR) 3K13: "Critical Stress for an Infinitely Long Flat Plate with Elastically Restrained Edges Under Combined Shear and Direct Stress" by Elbridge Z. Stowell and Edward B. Schwartz	Nov 1943	
12	NACA Advance Restricted Report (ARR) L4H29: "Wartime Report – Charts for Calculation of the Critical Compressive Stress for Local Instability of Idealized Web- and T-Stiffened Panels" by Rolla B. Boughan and George W. Baab	Aug 1944	
13	NACA Advance Restricted Report (ARR) no. 4E31: "Torsion Tests of Stiffened Circular Cylinders" by R.L. Moore & C. Wescoat	1944	
14	Report No. EM-9-18: "Stress Rise Due to Offset Welds in Tension" by E.E. Sechler	Aug 28, 1959	
2	1	NASA Technical Report R-103: "Theoretical Elastic Stress Distributions Arising from Discontinuities and Edge Loads in Several Shell-Type Structures" by Robert H. Johns & Thomas W. Orange	1961
	2	NASA Technical Report TMX-51644: "Mismatch Stresses in Pressure Vessels" by Robert H/ Johns	Apr 6, 1964
	3	Technical Report. "Observations of LM Heat Exchanger Pressure Tests at GAEC Incorporating the GAEC Reinforcement" by Herbert C. Kavanaugh	Aug 15, 1967

4	Structures Branch Report 68-ES4-1: Structural Analysis of the Service Module Fuel Cell Cryogenic Oxygen and Hydrogen Pressure Vessels by Herbert C. Kavanaugh	Oct 23, 1967
5	Technical Report AFFDL-TR-67-184: Analytical Design Methods for Aircraft Structural Joints by W.F. McCombs, J.C. McQueen, J.L. Perry	Jan 1968
6	Structures Branch Report 68-ES4-5: Determination of Axial Stresses in the Launch Escape System Frangible Nut Due to Bolt Preload by Herbert C. Kavanaugh	Dec 17, 1968
7	Technical Report 339: Interaction Curves for Combined Loads in the Plastic Range, McDonnell Aircraft	Jan 2, 1969
8	Structures Branch Report 69-ES4-4: Stress Analysis of Modified Apollo Crew Couch Test Sled for 30g Impact Loads by Herbert C. Kavanaugh	Mar 6, 1969
9	NASA Technical Report SP-8032: "Space Vehicle Design Criteria – Buckling of Thin-Walled Doubly Curved Shells"	Aug 1969
10	NASA Contract Monitor Report LMSC-4-05-70-9: Elastic and Plastic Analysis of Pressure Vessel Weld Lands with Mismatch by J. Skogh & A.M.C Holmes	May 1970
11	Technical Report AFFDL-TR-70-107: CRACKS, a Fortran IV Digital Computer Program for Crack Propagation Analysis by Robert M. Engle	Oct 1970
12	NASA Technical Report SP-8057: Structural Design Criteria Applicable to a Space Station (Revised)	Jan 1971
13	Report AFFDL-TR-70-118: "An Automated Procedure for the Optimization of Practical Aerospace Structures – Volume I: Theoretical Development & User's Manual" by W.J. Dwyer, R.K. Emerton, & I.U Ojalvo	Apr 1971
3	1 Report AFFDL-TR-70-118: "An Automated Procedure for the optimization of Practical Aerospace Structures – Volume II: Programmer's Manual" by W.J. Dwyer, R.K. Emerton, & I.U Ojalvo	Apr 1971
2	Structures Branch Report 71-ES2-2: Instructions for Using the Linear Simultaneous Equation computer Program by Herbert C. Kavanaugh	May 31, 1971
3	Structures Branch Report 71-ES2-3: A Computer Program for Crack Propagation Analysis (CRACK) by Herbert C. Kavanaugh	Jul 16, 1971
4	Structures Branch Report 71-ES2-4: Structural Analysis of Beech 110-inch Diameter Outer Shell Design by Herbert C. Kavanaugh	Aug 6, 1971
5	Structures Branch Report 71-ES2-5: Structural Analysis of Beech 91-Inch Diameter Inner Pressure Vessel Design by Herbert C. Kavanaugh	Oct 20, 1971
6	NASA Technical Report SP-8083: NASA Space Vehicle Design Criteria – Discontinuity in Metallic Pressure Vessels"	Oct 1971
7	Structures Branch Report 72-ES2-2: Formulation of Design Stability Curves for Use in the Grumman Automated Structural Optimization Program (ASOP) by Herbert C. Kavanaugh	May 1972
8	Structures Branch Report 72-ES2-7: Structural Design of O49 Orbiter Payload Bay Area Using an All-Aluminum Tubular Truss Arrangement by Herbert C. Kavanaugh	Oct 1972

	9	Structures Branch Report 73-ES2-6: Orbiter Fuselage Payload Bay Frame Weight Study for Various Payload Support Spacings by Herbert C. Kavanaugh	Sept 1973
	10	Structures Branch Report 73-ES2-7: Payload Orientation Effects on Fuselage Frame and Longeron Weight by Herbert C. Kavanaugh	Sept 1973
	11	Report AFFDL-TR-74-96: "An Improved Automated Structural Optimization Program"	Sept 1974
	12	Material Properties Report 20.06.01.01.01: Brazed Corrosion-Resistant Steel Tube Joints	Jun 30, 1975
	13	Technical Report EDIN EX-338-76: Preliminary Design Analysis of a Space Power Satellite Heavy Lift Launch System	Dec 1976
4	1	Report AFFDL-TR-76-157: "ASOP-3: A Program for the Minimum-Weight Design of Structures Subjected to Strength and Deflection Constraints" (w/ instructions)	Dec 1976
	2	Technical Report. "Shuttle Mid-Fuselage Side Panel Stability Analysis Including Effects of Lateral Pressure Loading" (Draft) by Herbert C. Kavanaugh	Feb 2, 1976
	3	Technical Report EDIN EX-129-77: Preliminary Design Analysis of a Space Power Satellite Heavy Lift Launch System (Configuration EX-129-77)	May 1977
	4	Oft 2 Experiment Weight Report	Oct 19, 1977
	5	Weekly Activity Report by J.H. Johnson	Sept 1978
	6	Hazard Report IG-6. "Comment on Penetration Possibility of Loose Parts Through G.A.S. Cannister"	Aug 1981
	7-8	Structures Branch Report JSC-18331: OV102 OMS Pod Strength Capability for Heavy Weight Reaction Control System Propellant Tanks at Landing by Herbert C. Kavanaugh (2 folders)	May 1982
	9	Structures Report. "Strength Integrity of the OMS Engine Throat Liner for Two Conditions of Mechanics Error During Plug Installation" (Draft) by Herbert C. Kavanaugh	Oct 26, 1982
	10	NASA Contractor Report 3663: "Design Concepts for Large Reflector Antenna Structures" by John M. Hedgepeth & Louis R. Adams	Jan 1983
5	1-3	Structural Mechanics Branch Report JSC-19220: Preliminary Structural Design and Analysis of a Shuttle Launched Space Station Manned Habitable Module by Herbert C. Kavanaugh – Draft (folder 1-3)	Jul 1983
	4	Structural Mechanics Branch Report JSC-19667: Torsional Buckling of Unstiffened Circular Cylinders – Draft & Final by Herbert C. Kavanaugh	Apr 1984
	5	Technical Report: Analysis of Mechanically Prestressed Circular Window (MPCW) by R. Kreuzman & K. Edelstein	May 8, 1984
	6	Stress Analysis Report. SRB Beam Deflection and Tank Interference Analysis (part of failure analysis for Shuttle Discovery Explosion) by Herbert C. Kavanaugh	Mar 17, 1986
6	1-2	Structural Mechanics Branch Report JSC-22185: STS Extended Crew Module Structural Design and Analysis (Draft) by Herbert C. Kavanaugh (folders 1-2)	May 1986
	3	Technical Report. SUS Oxidizer Tank Sizing (Draft) by Herbert C. Kavanaugh	Sept 23, 1986

	4	Technical Report. Space Station Factor of Safety Study (Draft) by Raymond L. Nieder	Jan 12, 1987
	5-7	Structural Mechanics Branch Report JSC-22536: Comparison of Design Methods with Test Data for Structure Fabricated of Cross-Rolled Beryllium Sheet by Herbert C. Kavanaugh (3 folders)	Apr 1987
7	1	Structural Mechanics Branch Report JSC-19652A: Instructions for the Preparation of Stress Analysis Reports (Revised) by Herbert C. Kavanaugh	Sept 1987
	2	Stress Analysis Report. Structural Sizing and Weight Estimation for a Proposed Space Station Partial Entry Cupola Configuration by Herbert C. Kavanaugh	Jan 13, 1988
	3	Structures Branch Report. "Payload Hazard Report."	Feb 1988
	4	NASA Technical Report JSC-22267: Fatigue Crack Growth Computer Program "NASA/FLAGRO"	Rev. Mar 1989
	5	NASA Contractor Report 186010: "A Guide to Structural Factors for Advanced Composites Used on Spacecraft" by Robert Van Wagenen	Aug 1989
	6	Materials Branch Report 90-ES5-3: Containment and Impact Damage Assessment of Loose Parts Resulting From Fracture for NSTS Payloads by Raymond M. Patin	Apr 1990
	7	Stress Analysis Report. "Elastic Ballistic Velocity" by Herbert C. Kavanaugh	July 20, 1990
	8	Payload Safety Reviews	February 1990-1992
	9	NASA Technical Paper (Report): Structural Deterministic Safety factors – Selection Criterion and Verification (Draft for Review) by V. Verderaiame	Jun 7, 1991
	10	Technical Report MJ073-001C: Standard End Item Specification for Orbiter Payload Integration Hardware (w/ Notes)	Apr 30, 1992
	11	Program TMOD7 Report No. SSD950233: Mid-Fuselage Stiffened Panel Analysis by Ko Liu	Jun 1996
	12	Analytical Report. "Suggestions for Designing Corners in Boxes Subjected to Internal Pressure"	undated
	13	Engineering Report. "Honeycomb Panel Computer Analysis"	undated
	14	Stress Analysis Report. Stress Analysis of Cassini Dome Model 2 Shuttle-Launched Space Station	undated
8	1-2	Structures Branch Report 69-ES4-5: Structural Analysis of the Redesigned Upper and Lower Gondola Caps for the NASA-MSFC Flight Acceleration Facility – Astronaut Centrifuge (2 folders)	undated
	3	Technical Report. "An Analytical Method to Determine the Elastic Stability of Stiffened Cylinders Subjected to Pure Bending"	undated
	4	Technical Report. LM-1 Torque and Leak Summary	undated
	5	Technical Report MJ070-0001-1C: Orbiter End Item Specification	undated
	6	Technical Report. Proof of Strength Integrity for Flight Structures	undated
	7	Technical Report ICD-2-19001: Shuttle Orbiter/Cargo Standard Interfaces, Section 4.0: Structural Interfaces	undated
	8	Technical Report. Methods of Analysis of Stiffened Cylinders Subjected to Compression (Draft)	undated

9	Technical Report. Preliminary Results of Compression Test on Cylinders with Eccentric Longitudinal Stiffeners by Michael F. Card	undated
10	NASA Technical Report 2427-62: "Theoretical and Experimental Analysis of Several Typical Junctions in Space Vehicle Shell Structures" by Robert H. Johns, William C. Morgan, & David A. Spera	undated
11	Topical Report N65-16931: "Plastic Instability of Cylindrical Shells with Rigid End Closures" by M.A. Salmon	undated
12	Phase Report No. 1, IITRI Project No. M6053: "Experimental Determination of Stress Distributions in Thin Walled Cylindrical and Spherical Pressure Vessels with Circular Nozzles" by W.F. Riley	undated
13	Technical Report. "Method of Material Evaluation for Designing Segmented Sphere Vessels" by J.W. Farrell	undated
14	NACA Advance Restricted Report (ARR) No. L6A05: "Charts for Critical Combinations of Longitudinal and Transverse Direct Stress for Flat Rectangular Plates" by Charles Libove and Manuel Stein	undated
	Series III: Internal Notes	
15	MSC Internal Note IN-65-ES-6: Meteoroid Protection for Spacecraft	May 1, 1965
16	MSC Internal Note MSC-ES-E-67-8: Structural Analysis of a 39-Inch Spherical Cryogenic Storage Pressure Vessel	Oct 1967
	Series IV: Technical Notes	
9	1 NACA Technical Note No. 1364: "Strength Analysis of Stiffened Seam Webs" by Paul Kuhn and James P. Peterson	July 1947
	2 NACA Technical Note 2661: "A Summary of Diagonal Tension Part I – Methods of Analysis" by Paul Kuhn, James P. Peterson, and L. Ross Levin	May 1952
	3 NACA Technical Note 3368: "Analysis of Behavior of Simply Supported Flat Plates Compressed Beyond the Buckling Load into the Plastic Range by J. Mayers & Bernard Budiansky	Feb 1955
	4 NACA Technical Note 3781: "Handbook of Structural Stability Part I – Buckling of Flat Plates" by George Gerard and Herbert Becker	Jul 1957
	5 NACA Technical Note 3782: "Handbook of Structural Stability Part II – Buckling of Composite Elements" by Herbert Becker	Jul 1957
	6 NASA Technical Note TN D-162: "Handbook of Structural Stability, Part VII – Strength of Thin-Wing Construction" by George Gerard and Herbert Becker	Sept 1959
	7 NASA Technical Note TN D-1251: "Structural Behavior and Compressive Strength of Circular Cylinders with Longitudinal Stiffening" by James P. Peterson, Ralph O. Whitley, & Jeremy W. Deaton	May 1962
	8 NASA Technical Note TN D-1200: "Experimental Investigation of Stress Distribution Near Abrupt Change in Wall Thickness in Thin-Walled Pressurized Cylinders" by W.C. Morgan & P.T. Bizon	Jun 1962

	9	NASA Technical Note TN D-165: "Experimental Evaluation of Theoretical Elastic Stress Distributions for Cylinder-to-Hemisphere and Cone-to-Sphere Junctions in Pressurized Shell Structures" by W.T. Morgan & P.T. Bizon	Feb 1963
	10	NASA Technical Note TN D-2200: Bending Tests of Large Stiffened Cylinders Susceptible to General Instability by Michael F. Card	Apr 1964
	11	NASA Technical Note TN D-2672: "Investigation of the Elastic-Plastic Stress State Around a Reinforced Opening in a Spherical Shell" by Albert Kaufman & David A. Spera	Feb 1965
	12	NASA Technical Note TN D-2960: "Buckling of Electrically Stiffened Orthotropic Cylinders" by David L. Block, Michael F. Card, and Martin M. Mikulas, Jr.	Aug 1965
	13	NASA Technical Note TN D-3254: "Theoretical Elastic Mismatch Stresses" by Robert H. Johns	Jan 1966
	14	NASA Technical Note TN D-3608: "Comparison of Experimental and Theoretical Stresses at a Mismatch in Circumferential Joint in a Cylindrical Pressure Vessel" by W.C. Morgan & P.T. Bizon	Sept 1966
	15	NASA Technical Note TN D-3609: "Elastic Stresses at a Mismatched Circumferential Joint in a Pressurized Cylinder Including Thickness Changes and Meridional Load Coupling" by W.C. Morgan & P.T. Bizon	Sept 1966
	16	NASA Technical Note TN D-4878: "Compressive Properties and Column Efficiency of Metals Reinforced on the Surface with Bonded Filaments" by George W. Zender and H. Benson Dexter	Nov 1968
	17	NASA Technical Note NASA TN D-5556: Simplified-Limit Expressions for Thin Sheets by Deene J. Weideman	Nov 1969
	18	NASA Technical Note TN D-6784: "Effects of Eccentricities and Lateral Pressure on the Design of Stiffened Compression Panels" (Draft) by Gary L. Giles & Melvin S. Anderson	Mar 22, 1972
	19	NASA Technical Note TN D-8525: "An Optimality Criterion for Sizing Members of Heated Structures with Temperature Constraints" by G.V. Rao, C.P. Shore, & R. Narayanaswami	Oct 1977
	20	NACA Technical Note No. 479: Strength Tests of Thin-Walled Duralumin Cylinders in Pure Bending	undated
	21	NASA Technical Note TN D-3639: "Experimental and Theoretical Results for Buckling of Eccentrically Stiffened Cylinders" by Michael F. Card and Robert M. Jones	undated
	22	NACA Technical Note No. 1557: "Compressive Buckling of Simply Supported Plates with Transverse Stiffeners" by Bernard Budiansky & Paul Seide	undated
10	1	NACA Technical Note 3735: "Bending Tests of Ring-Stiffened Circular Cylinders" by James P. Peterson	undated
	2	NACA Technical Memorandum WAPD-TM-398: "Seal-Shell-2 – A Computer Program for the Stress Analysis of a Thick Shell of Revolution with Axisymmetric Pressures, Temperatures, and Distributed Loads" by C.M. Friedrich	Dec 1963

3	NASA Technical Memorandum X-53315: "Compression Tests on Integrally Stiffened Cylinders" by Lester Katz	Aug 6, 1965
4	NASA Technical Memorandum TM X-58086: Computer Analysis of Two-Dimensional Fatigue Flaw-Growth Problems by Royce G. Forman, Herbert C. Kavanaugh, and Bernard Stuckey	Feb 1972
5	NASA Technical Memorandum. "The Mechanical Behavior of Cross-Rolled Beryllium Sheet" by J.A. Henkener, I.K. Spiker, and W.L. Castner	Feb 1992
Series V: Manuals & Handbooks		
6	North American Rockwell Corporation, Space Division. Structures Manual, Section 4.23: Sheet Stiffener Combinations	May 1, 1952
7	NASA CR-912: Shell Analysis Manual by E.H Baker, A.P. Cappelli, L. Kovalevsky, F.L. Rish, & R.M. Verette	Apr 1968
8	Instructions for "Sculpted Surface" Computer Program	Dec 23, 1973
9	Master Library: Using the Power of Your Solid State Software Module (TI Programmable 58C/59) by Texas Instruments	1977-1979
10	MSFC-HDBK-505 Revision A: Structural Strength Program Requirements	Jan 1981
11	MIL-HDBK-343 (USAF): Military Handbook – Design, Construction, and Testing Requirements for One-of-a-Kind Space Equipment – Metric	Feb 1, 1986
12	Recommended Spacelab Payload Accommodation Handbook (SPAH): Loose Equipment Restraint Requirements	Oct 1989
11	1 AIAA Handbook, Chapter 15: Structures and Materials – <i>other media included</i> (2 folders)	1989-1990
	2 Structural and Mechanical Safety Guidelines for Payloads on Unmanned Launch Vehicles (Preliminary)	Aug 1990
	3 Structural Factors of Safety and Verification Guidebook (Draft) by O. Harari	Oct 1990
	4 MSFC-HDBK-505 Revision B: Structural Strength Program Requirements	Sept 19, 1990
	5 NASA Reference Publication 1228: Fastener Design Manual by Richard T. Barrett	1990
	6 Subseries A: Excerpts Chapter 4: Shear Lag, "Stresses in Aircraft & Shell Structures" by Paul Kuhn (Excerpt)	1956
	7 National Bureau of Standards Handbook H28: Screw-Thread Standards for Federal Services 1957, Part III: Section XIV, National Buttress Threads (Excerpt)	ca. 1957
	8 Gasket Materials and Contact Facings Chart in "Process Equipment Design" by Lloyd E. Bronwell & Edwin H. Young (Excerpt)	1959
	9 Manned Spacecraft Center Management Manual (Excerpt)	Sept 10, 1962
	10 Manned Spacecraft Center Management Manual (Excerpt)	Feb 15, 1966
	11 Input Instructions for MSC Program G100 (Excerpt)	undated
	12 General Computer Instructions (Excerpt)	undated
	13 The Solution of Simultaneous Linear Algebraic Equations (Excerpt)	undated

	14	Threaded Fastener Guidelines (Excerpt)	undated
	15	"Chapter 4. Design Characteristics" (Excerpt)	undated
		Series VI: Standards	
	16	MIL-R-8573A (ASG) Amendment 3: Military Specification: Reservoirs, Air, Nonshatterable Steel	Aug 3, 1961
	17	MFSC-STD-486A: Standard: Threaded Fasteners, Torque Limits For	Rev. Dec. 11, 1987
	18	National Space Transportation System NSTS 08307: Criteria for Preloaded Bolts	Oct 13, 1989
	19	Structural Design and Verification Requirements for Space Station Freedom	May 1, 1990
	20	Glass, Window, and Ceramic Structural Design and Verification Requirements	May 2, 1991
	21	Strength Verification Requirements for Bonded Honeycomb Sandwich Panels Used in Orbiter Payloads	undated
	22	Proposed Updates to NSTS 14046 Payload Verification Requirements	undated
	23	Reusable Manned Spacecraft Structural Criteria	undated
	24	Criterion for Band Clamp (e.g. Marman Clamp) Certification	undated
		Subseries A: Excerpts	
	25	MSFC-STD-561: Threaded Fasteners. Securing of Safety Critical Flight Hardware Structure Used on Shuttle Payloads and Experiments	Sept 15, 1982
	26	SAE Standard J429 AUG83: Mechanical and Material requirements for Externally Threaded Fasteners by SAE International	Aug 1983
	27	MIL-STD-1522A: Standard General Requirements for Safe Design and Operation of Pressurized Missile and Space Systems, Figure 1: Total Energy Contained in a Pressure Vessel, USAF	May 28, 1984
	28	Proposed Change to NSTS 1700.7B "Safety Policy and Requirements for Using the Space Transportation System"	Dec 15, 1987
	29	Airworthiness Standards: Transport Category Airplanes by the Federal Aviation administration	Aug 20, 1990
12	1	Structural Design and Verification Criteria	undated
	2	Chapter 1: Definitions and Design Regulations, Peterson's Stress Concentration Factors	undated
		Series VII: Periodicals	
	3	Journal of Mechanical Engineering, vol. 49: "The Strength of Pipe Flanges" by Everett O. Waters and J. Hall Taylor	May 1927
	4	Journal of the Aeronautical Sciences	1944-1957
	5	"Simplified Analysis of General Instability of Stiffened Shells in Pure Bending" by F.R. Shanley	May 20, 1949
	6	Aircraft Engineering and Aerospace Technology, Vol. 26 no. 7: "Flexure-Torsion Failure of Panels: A Study of Instability and Failure of Stiffened Panels under Compression when Buckling in Long Wavelengths" by John H. Argyris	Jun 1954
	7	Journal of Applied Physics	1955
	8	Journal of Applied Mechanics	Jun 1957-1958
	9	Machine Design Magazine	1961-1989

	10	"Analysis of Elastic-Plastic Shells of Revolution Containing Discontinuities" by David A. Spera	Nov 1963
	11	AIAA Journal	1964-1968
	12	Journal of Basic Engineering: "Numerical Analysis of Crack Propagation in Cyclic-Loaded Structures" by R.G. Forman, V.E. Kearney, & R.M. Engle	Sept 1967
	13	Journal of Spacecraft & Rockets, vol. 4, no. 6: "Optimum Thickness Transitions for Cylindrical Pressure Vessels with Hemispherical Heads" by E.Y.W. Tsui & A. Bruce Burns	1967
	14	Transactions of the American Society of Mechanical Engineers	1967
	15	Design News Magazine	1973-1977
	16	Journal of Aircraft, vol. 13 no. 10: "Isogrid Structural Tests and Stability Analyses" by P. Slysh, J.E. Dyer, J.H. Furman, & J.E. Key	Oct 1976
	17	PC World Magazine	1987
	18	MSC World: Advancing Excellence in the World of Finite Element Analysis, vol. IV, no. 3	Oct 1994
	19	"Smooth Specimen Simulation of Fatigue Behavior of Notches" by R.M. Wetzel	undated
	20	"Structural Engineers Find IBM PC's and ECOM Software Can Do The Job" by Susan Snyder	undated
	21	Structures Information Bulletin Subseries A: Excerpts	undated
	22	"Section 6.6: Single Rivets and Bolts in Tension" by William McGuire	undated
		Series VIII: Assessments	
	23	5 Cubic Foot G.A.S. Canister Structural Test Plan	Sept 1978
	24	"Strength Integrity Assessment of the RCS Propellant Tanks for STS-1 Lift-Off Loads" by Herbert C. Kavanaugh	Sept 30, 1981
	25	Bi-Metallic Joint Bolt Test	1975-1978
		Series IX: Data	
13	26	Calculations for Structural Integrity of Annealed Titanium LEM Space Adapter Design Study	undated
	1	LEM Space Adapter Design Study	undated
	2	Test Data from "Impact: the Theory and Physical Behavior of Colliding Solids" by Werner Goldsmith	undated
	3	Sample Problem for Double Bubble Fuselage by Herbert C. Kavanaugh	undated
		Series X: AIAA Papers	
	4	"Meteoroid Protection for Spacecraft in Near-Earth or Near-Lunar Orbits by Herbert C. Kavanaugh	1966
	5	"Fatigue of Welded Joints: An Overview" by Lawrence Boyles	May 24, 1990
		Series XI: Conference Proceedings	
	6	"New Materials and Fatigue Resistant Aircraft Design" edited by David L. Simpson. Proceedings of the 14 th Symposium of the International Committee on Aeronautical FATIGUE (ICAF)	Jun 8-12, 1987

7		"Buckling of Axially Compressed Cylinders with Eccentric Longitudinal Stiffeners" by Michael F. Card & Robert M. Jones. 7 th Structures & Materials Conference	1966
8		"Development of Methodology for Optimum Design of Structures at Elevated Temperatures" by H.M. Adelman, P.L. Sawyer, & C.P Shore, AIAA/ASME 19 th Structure, Structural Dynamic, & Materials Conference	Apr 3-5, 1978
9		Series XII: Meeting Minutes JSC/MSFC Structural Criteria Meetings	
10		Series XIII: Presentations MPS Dissimilar Metal Joints by R.G. Minor	Apr 20, 1978
11		"Use of Safety Factor (S.F.) of 2.0 for 'No-Test' Option" by Carmelo J. Bianca	Feb 15, 1990
12		Structural Mechanics Division Transparencies	Sept 30, 1991
13		Structural Analysis—An Overview by Don Probe	May 7-14, 1992
14		Factor of Safety History	undated
15		Series XIV: Patents U.S. Patent Disclosure for Triangular Space Station Configuration	1973-1984
16		Series XV: Brochures Computer Software Informational Brochures	1984-1985
14		Series XVI: Oversize Items	
1		Technical Report. "Shuttle Mid-Fuselage Hydrostatic Stability Analysis" by Herbert C. Kavanaugh	Jan 30, 1976
2		Stress Level in the Frangible Nut Due to Bolt Preload by Herbert C. Kavanaugh	November 18, 1977
		<i>NOVEMBER 2017 ADDENDA</i>	
15	1-7	Series XVII: Structural Reports Numerical Analysis of Stiffened Shells of Revolution, Vols. I - VII by V. Svalbonas	Sept 1973
16	1	"Stresses and Displacements in Elastic/Plastic Shells of Revolution with Temperature – Dependent Properties" by Perry Stern	Jan 1963
	2	"Stresses in Thin vessels Under Internal Pressure" by Norman N. Au	Jan 15, 1964
	3-4	"Study of Stability of Unpressurized Shell Structures Under Static Loading, Final Report, Volumes I-II"	Apr 21, 1966
	5-7	The Stability of Eccentrically Stiffened Circular Cylinders, Vols. I – III	Jun 20, 1967
17	1-2	The Stability of Eccentrically Stiffened Circular Cylinders, Vols. V – VI	Jun 20, 1967
	3	Study of Stability of Unpressurized Shell Structures Under Static Loading, Final Report	Jun 20, 1967
	4	"Space Station Preliminary Design Report"	Sept 1982
	5	"Structural Analysis of the Redesigned Upper and Lower Gondola Caps for the NASA-MSC Flight Acceleration facility – Astronaut Centrifuge" by Herb Kavanaugh & TJ Dunn	ND
		Series XVIII: Annual Reports	

18	6-9	Structures & Mechanics Division Annual Reports	1986-1990
	1	Structures & Mechanics Division Annual Report	1991
		Series XIX: Handbooks	
	2	Aerospace Structural Metals Handbook: Ferrous Alloys (Excerpt) by JR Kattus	Revised Dec 1973
	3-4	Shell Analysis Manual (2 folders)	