JOHN HOWARD KIMZEY COLLECTION

by

Justine Lopez Dominy, BA

MASTER'S PROJECT

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by

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Acknowledgements

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ABSTRACT

JOHN HOWARD KIMZEY COLLECTION

Justine Lopez Dominy
University of Houston-Clear Lake, 2018

Master's Project Chair: Adam Hodges, Ph. D.

This project includes the organization and preservation of the John Howard Kimzey collection. Included are a process narrative, finding aid, and a selection of digitized material from the collection. John Kimzey was an employee of the National Aeronautics and Space Administration's Johnson Space Center. As a chemical engineer, his contributions to the understanding of Zero-gravity flammability were groundbreaking. From Gemini, Mercury, and Apollo to his work as a Principal Investigator for Skylab 4, Kimzey's work continued to be at the forefront of the field of study that he pioneered. This project aims to shed light on the significance of his work and his contribution to the space program from his initial work to the present and undoubtedly beyond.

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CHAPTER I:

PROCESS NARRATIVE OF ORGANIZING THE JOHN HOWARD KIMZEY PAPERS

Adding the John Howard Kimzey papers to the Human Space Flight Collection of the University of Houston – Clear Lake (UHCL) Archives is a significant acquisition in the preservation of the history of the National Aeronautics and Space Administration (NASA). This collection of ten boxes which had been previously unsorted and stored for eventual processing were kept by his family until his death in 2004 at which time they were donated. Processing the collection allowed me to embark on a new challenge and time to experience a different field of study within the broader field of History. I organized this entire collection following the UHCL Archives professional standards and the Library of Congress procedural methods. My degree plan had prepared me to analyze primary documents and assess their significance but I had not yet created a system to organize those documents so that other people could find them and do the same.

Ms. Lauren Meyers, the University Archivist, provided me with the opportunity to organize the professional papers of John Howard Kimzey, professionally known as J.H. Kimzey, a chemical engineer at the Johnson Space Center (JSC) during the Mercury, Gemini, Apollo, Skylab, and Space Shuttle programs. His expertise was in Zero-gravity (Zero-g) flammability and extinguishment as well as material safety. I had to begin with research on J.H. Kimzey, but there was little to no information on him that was readily available. Ms. Meyers was able to provide me with some limited evidence, however. His obituary covered small facts from throughout his life that helped create a picture. She also sent me a link to the NASA Technical Report Server on all projects which he had written or that cited him. His work and research were revolutionary and he is still cited as a leading expert in work pertaining to Zero- gravity Flammability.

On my first day in the archives Ms. Meyers guided me through an orientation over what my work would entail as well as helping me with sources that I could use. I received ten boxes that were stuffed full of folders and books. Kimzey kept paperwork spanning from the 1960s to 1997. That day in the archive I went through each box and pulled out random folders and went through the documents with the hope I would gain some idea of the type of material that Kimzey deemed important enough to file. I also hoped that going through the files would give me more insight into him as a person. The collection was in good condition. There was no noticeable damage such as exposure to moisture or extreme heat. Another of the collections I had seen was all bound in plastic binders that had melted together, I was happy that that I would not have to add that additional stress to my project because I would not want to accidently damage anything. Although the collection was in good shape I started to be daunted by the task that was before me. I spent the second day just looking through the boxes and trying to decide how I was going to organize his work and files.

On the third day, I was finally ready to get to work and so I piled two of the large boxes onto a cart and wheeled it out to the main commons of the archive. I reread the notes that were attached to the collection. Most of what was in the boxes he had filed, but the files had become jumbled together. I began pulling folders out one by one and carefully started to remove staples, paperclips, tape, and bindings. Most of the staples and bindings had started to rust, which made them difficult to remove. The rust also stained the documents they bound as well as any document they touched. I used a flat staple remover to carefully lift each side before I slowly pulled each staple off from the front. Kimzey had many documents within the folders that had been stapled several times at different locations throughout the packets. One packet of papers could have six or seven staples in it, even though only one was visible from the front. It was important for me to

go page by page and make sure that every staple and clip had been removed because over time, even in a climate controlled room, any rust would compromise the integrity of the documents. There were also extensive reports that had been bound together by industrial size and strength staples that were extremely hard to remove. I had to take the blade and try to loosen them as much as I could before I slowly removed a few sheets of paper at a time.

Overall preservation of these primary sources was paramount. I had to be careful to not ruin any of the collection which made the process of removal very slow. I would go wash my hands multiple times because my fingers would be covered in rust and I did not want to spread that rust color onto anything else in the collection. I assessed the documents that were previously bound to decide whether the original clips or bindings should be replaced with new plastic-coated paperclips or if leaving them loose within the folders would suffice. I left most of the documents loose with the exception of those that had correction notes clipped to them that correlated with specific pages within the folder. I also clipped together small papers, such as newspaper clippings, so that they would not fall out of a folder when removed from a box.

After I removed all the different types of bindings, I aligned all the documents from each folder and placed them into new acid-free manila folders. At the top of each folder I included Kimzey's name, collection number and the title for the documents held within that folder. Initially, I started to box these folders in no particular order because I had assumed that when I decided how to organize them it would be easy to move folders around from one box to another. That was a mistake that I made at the beginning, but it did not take me long to realize it was a bad idea. It left me constantly moving folders from one place to another. I had information on the best way to organize archival documents but I found that I wanted to have a system of my own. I decided to use the

professional system for sorting as my guidelines while I still allowed myself leeway to work independently. I was concerned that I would make a mistake in the way that I decided to organize the collection. To contribute to a permanent part of archive documentation is somewhat overwhelming; the work is important and deserves the utmost care.

I worked in the commons area daily with my unprocessed boxes at a table where I could spread out over the whole space. Ms. Meyers was always there to answer my questions and help guide me when I had a hard time deciding where and how to file certain material. There were men and women, former NASA and JSC employees, that came into the archives and volunteered their personal time to help organize other collections. They had interesting stories about NASA and different flight programs. Once when I was there a man that was working on a collection came across documentation that once belonged to him, with his name and notes in it. I was so interested in learning about this history straight from the people who had lived it. I realized even more how important this work was.

There was a clear pattern in the papers. They were once in alphabetical order with other boxes filed as collections of testing documents and protocol documents. I decided to leave the collection largely as it was, making changes along the way as needed. I would leave the majority of the collection in alphabetical order with the files that involved Johnson Space Center protocols added at the end of the alphabetical system in numerical order. I filed NASA Contractor Reports (NASA-CR) together also in numerical order followed by NASA Technical Manuals (NASA-TM). I created a separate section for the Space Shuttle Program (SSP) as well as White Sands Testing Facility (WSTF) Reports. In the last box is a chemistry book that belonged to Kimzey. I found the book to be interesting because he took detailed notes inside the book as well as worked

out problems. Kimzey kept newspaper clips of all kinds that fit in with different topics. He was very interested in keeping up to date with public stories about not only NASA projects but also about a variety of other topics. He dated each clipping and commented on some. That made for an interesting addition to the collection because he documented what he found to be important.

Another challenge that I faced was that there were many duplicates in the collection. Originally I thought that I would discard all duplicates until I realized that on some documents he had made notes on each of the duplicates in different areas. Some of these notes were edits others were to expand on the topic. I did not want to get rid of things that he personally annotated when it was linked to his research on flammability and material safety. I had to make decisions on what would stay and what I would remove. There was a large amount of undated material or single folders that contained documents that spanned over twenty years. That was one of the issues that led me to not group chronologically because the span in each folder was so vast and covering so many topics that sorting them that way would have left the collection no easier to look through than it had been when it was jumbled in boxes.

After I had separated and processed the collection, I created its finding guide. Ms. Meyers provided me with a template for the guide so that all information could be included in an orderly manner. I thought that filling in a template would be an easy task but I was mistaken. This would be the means by which anyone searching this collection would turn to as a guide, and I was responsible for that, this put much more pressure on creating my guide. Former classmates of mine had warned me not to number my folders within the boxes until the end. As soon as I began work on my finding guide, I understood why they had given me that advice. Although I had physically handled the material and at one point or another had it all laying out in front of me, until I created my

finding guide I had not seen all the folders and material laid out in front of me in a condensed manner. I started to rearrange my boxes and folders on paper so that I could later physically rearrange them. I moved folders from box two all the way down to box eleven and removed folders that ultimately duplicated the same topics. However, when I did this the folders had different amounts of fullness and they did not fit in the boxes the same way anymore, which caused me to reorganize all the boxes just to make these small changes. I ended up with all seventeen boxes laid out on the table in front of me while I moved each folder, one by one, into different boxes and struggled to get the right fit in each. The physical aspect of making the folders fit into certain size boxes was also another factor that I did not consider. If I would have numbered my folders ahead of making my guide, I would have had to go through every box, except for box one, and change every folder number. I was glad that I listened to the advice of those who had done this project before me.

Once the finding guide was finished, the folders were numbered, and the boxes labeled, the last thing to do was to digitize selected documents from the collection. Ms. Meyers told me from the beginning to look for material within the collection that I thought I might like to digitize. I am glad that she gave me that advice at the beginning because I was able to collect a few documents that I wanted to digitize while going through the collection instead of afterward, when I would have had to dig to find things. Ms. Meyers set aside time to work with me and the scanner in order to teach me how to scan and save the material correctly. She also showed me the Microsoft Excel template that goes along with each digitalized file so that it can be properly labeled and searched for within the online collection. Along with labeling each with a general title the Library of Congress has a set of standard subjects and genres that are maintained to ensure that people can find exactly what they are looking for if they enter those standard searches.

There is a section on the template that asks for input on the type of scanner used as well as scanning specifics and I was curious why we had to pay attention to the type of scanner used and what the settings were on it. Ms. Meyers was here to help and inform me that because this is historical data that researchers and others will use in place of the physical primary source it is our jobs as archivists to give them all information possible on how the document got to be from the version that it was to the version they are looking at. It also helps if it is years later and the person looking at the document wonders why the quality is so poor they can see the document was scanned in years ago on a poor scanner and there may be a better version available or it could be possible now to create a better version. The main scanner used in the Johnson Space Center Archives is an Epson Expression 10000 XL scanner. We scanned the images in at 400 Dots per Inch (dpi) and they uploaded as Tagged Image File Format (TIFF) documents were I saved them to a folder so that I could come back to them in case they needed to be edited. Photoshop was taken off the archive computers so any careful editing that I needed to do would have to be done at home. Fortunately for me there was no need for that type of editing.

The first document that I scanned was a drawing of a Zero- Gravity Installation. Kimzey drew blueprints with many of his notes. I decided to include his sketches because they were important to his work. The master files scan in very large, too large to send as an attachment in an e-mail sometimes. After I scanned in the first image Lauren went through the process of labeling the key points that had to be included. The template has all the different categories of information that I needed in order to label the images properly. The second set of documents that I digitized was a set of letters from Kimzey to a professor at a German University. Because the paper was old, from a typewriter, and there were multiple pages to be combined into one document, Ms. Myers suggested that we use the other scanner. The Canon scanner can combine multiple documents into a

larger file so that all the documents will be included. The German paper was not letter sized nor was it legal sized so we had to force a size through in order for it to scan. With this document I went to Adobe and ensured that I included text recognition as Lauren had asked so that people searching online can search within the document as well. The last document that I scanned in was legal sized and was a blueprint so I returned to the Epson scanner. The drawing had started to fade and the paper had been folded up. Ms. Myers had informed me that there were weights that could be put on the top of the paper to hold the folds flat but that because they were three dimensional it made it impossible for the cover to lay down flat which then let light in. The light would make the poor quality worse and so instead we opted to darken the picture once the scan was completed. If there is anything done to a document that changes the appearance from the original, even if it is to improve clarity that must be documented so that anyone looking at it knows that is not the original version.

Throughout my undergraduate and graduate career I used online digital copies of primary documents extensively for research. That displays the importance of archiving the hard copies as well as digital copies. Web collections of archives such as History Vault were essential to my completion of both degrees and I wanted to contribute to helping other scholars in their studies and their search for primary sources to guide them. However, unlike History Vault or unprocessed collections, I wanted people doing research to have access to documents that have been organized in a comprehensive manner so that they also would not have to spend time digging through pdf after pdf, stack after stack or box after box. That is part of what made this project so important for me. I want people doing research to have access to documents that have been organized in a comprehensive manner so that they also do not have to spend time digging through stacks and boxes. After spending two semesters in the archives I realize there are so many

collections that might sit on shelves indefinitely because there is nowhere near the amount of man power to put in the hours to give each collection the time and care it needs. Luckily the JSC archives have volunteers that understand the importance of the work that they did as employees and take pride in what they are doing now to preserve the past.

To be an archivist is to live out history through everything you touch and process. The methods, time, and care that go into that work all make it possible for historians to do our work. The chance at having this opportunity was important to me in my development as a historian. Ms. Meyers is so talented and knowledgeable in her field and these collections are under her watch, so she could have easily watched over my shoulder the entire time to make sure that I was doing things her way but she did not. Ms. Meyers gave me the opportunity to be an archivist. I was able to make decisions for myself and I learned from my own mistakes. I worked through the collection alone using my analytical skills to further my progress. Although Ms. Meyers was always there any time that I needed her assistance or to run an idea by her, being allowed to do this on my own was rewarding to say the least. I felt like I was an archivist and that this was simply the first of many collections that I would work with. Working with primary documents was rewarding and opened a window into history that I would have never had a chance to look through without spending time in the archive.

CHAPTER II:

INVENTORY OF THE JOHN HOWARD KIMZEY COLLECTION

FINDING AID FOR THE JOHN HOWARD KIMZEY PAPERS, 1961-1997 (#2018-0009)

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

Descriptive Summary

Repository (049): University Archives

Collection # (099): #2018-0009

Title (245): John Howard Kimzey Papers

Creator (100/110): Kimzey, John H.

Inclusive Dates: 1961- 1997

Bulk Dates: 1965-1972

Extent (300): 10 linear feet, 18- 6" boxes, 2- 3" boxes

Language (546): English

Administrative Information

Restrictions on Access (506): none

Restrictions on Use (540): none

Acquisition Information (541): This collection was donated by the family of John Howard Kimzey after his passing in 2004.

Processed by (583): Justine Lopez Dominy

Preferred Citation (524): John Howard Kimzey Papers (#2018-0009), University of Houston-Clear Lake Archives.

Biographical/Historical Note (545)

John Howard Kimzey started to work at the Johnson Space Center as a chemical engineer. He was nationally renowned as an expert in flammability, specifically in the oxygen atmosphere of manned spacecraft, and extinguishment in an oxygen environment. As Principal Investigator for Skylab 4 he performed individual experiments under Technology and Materials Processing focused on Zero-g Flammability. His work demonstrated that it would be hard to control and direct water in space, which meant that it would not be sufficient to put out a fire. Until 1991, his fire experiments in a combustion chamber were the only combustion-related study conducted on a spacecraft. His work on the effects of various fire extinguishing agents in special atmospheres was useful in the development of techniques and equipment for manned spacecraft. The experiments and investigation performed on Skylab 4 formed the rest of his career and made him a pioneering expert for decades to come in this important and underdeveloped field of research.

Kimzey analyzed the data that was gathered from Mercury and observed issues that could affect future manned spacecraft, after which he defined problem areas in flammable and toxic materials. He demonstrated that materials for use on a manned spacecraft needed to be selected with primary attention to crew safety in order to keep them safe from toxic and flammable gases. He was involved with experiments during the Gemini project involving microgravity flights and throughout Gemini it was a major goal to perfect methods of safe reentry. This was an issue that Kimzey also focused on because he was concerned with the materials that were used in space and how they would affect the health of the space team and how those materials would react under the direct pressures and heat of a changing external environment while maintaining an internal oxygen environment.

His work during Apollo continued to develop knowledge of flammability in spacecraft. He continued study of materials, lubricants, and specific clothes and how they would react in oxygen-rich environments with a manned crew aboard. He was ever insistent on the importance of testing flammability scenarios and safety aboard a manned spacecraft. Following the Apollo 13 supercritical oxygen tank incident, Kimzey wrote *Review of Factors Affecting Ignition of Metals in High Pressure Oxygen Systems* which provided summaries of reported data and emphasized the effects of "oxygen concentration; total pressure; convection, including zero gravity; oxygen percentage; and halogenated compounds on ignition." He continued to contribute to the Shuttle program from its conception until his death in 2004. In 1991 he authored *Flammability as Related to Spacecraft Design and Operations*, continuing his work directed toward flammability and extinguishment.

Scope and Content (520)

Collection contains the work of J.H. Kimzey. His participation in many field testing at White Sands (WSTF) and in other testing facilities focused on material safety and flammability and extinguishment in a Zero Gravity (Zero-G) environment. His work spans through the 1960s through the eras of Gemini, Mercury, Skylab, and Apollo. After

leaving his job as the Johnson Space Center he worked for a few outside contractors continuing to do invaluable research for the Space Program.

Arrangement

The collection is organized by topic in alphabetical order. There are separate bulk sections for important topics that are reoccurring. Flammability is a large focus as his life work revolved around flammability in zero-g environments.

Index Terms (6xx):

Personal Names: John Howard Kimzey

Corporate Names: Goddard Space Flight Center, Kalrez, Kapton, Kel- F, Kennedy Space Center, Krytax, Kynar, Lubeco, McDonnell Aircraft Company, McDonnell Douglas Space Systems Company, Nextel, UCLA, Wyle Laboratories

Subjects: Apollo, Challenger, Columbia, Flammability, Johnson Space Center (JSC), NASA Contractor Reports (NASA CR), NASA Technical Manual (NASA TM), NASA Technical Reports (NASA- TR), Skylab, Skylink Apollo-Soyuz, Space Shuttle Program (SSP), White Sands Testing Facility Test Report (WSTF TR)

Places: White Sands, Houston, Nassau Bay, Clear Lake, Los Angeles

Document Types: Paper, Photographs, Microfilm transparencies, Books, Functions

Items Separated

Duplicated materials were separated to preserve space.

Inventory

Box	Folder	Title	Date
		Series 1: Topics in Alphabetical Order	
1	1	Acoustics	1960s
	2	Adhesion Characteristics of Cold plate Thermal Test Pads	1960s
	3	Adhesion of Metals and Non-Metals in Ultrahigh Vacuum (Preparation and Final Report)	1965-1966

	4	Adhesives	1989,1994
	5	Aerospace Fallout	1960s
	6	Aging	1971,1985-1988
	7	Aircraft	1969, 1978
	8	Aluminum	1973, 1974, 1980-1991
	9	Apollo 204 Hearing before Committee on Aeronautical and Space Sciences	1967, 1986
	10	Arc Tracking	1984-1991
	11	Asteroids (tracking)	1971, 1991-1998
	12	Atomic Oxygen	1983-1991
	13	Atmosphere	1965
2	1	Auto decomposition of Hydrazine	1963-1977
	2	Auxiliary Power Units Challenger and Columbia	1983-1984
	3	Batteries and Lithium	1955-1959, 1972, 1980-1985
	4	Beryllium	1962
	5	Boron Nitride	Undated
	6	Cadmium (Use for Spacelab)	1981-1982
	7	Carbon Monoxide	1971, 1983, 1985
	8	Cleanliness- Rules and Regulations, Requirements Apollo and Skylab	1962-1972, 1988-1992
	9	Combustion Experiments Orbiting Spacecraft Subcontract under NASA contract NAS7-100	1974

	10	Compatibility – Hydrazine and Polymers	1976-1984, 1991
	11	Determining and Assess the State of the Art of High Pressure, Centrifugal Oxygen Compressors Task 1 of Contrast E (46-1)-8010	1976
	12	Elastomers	1969, 1973
	13	Electrical Insulation	1969, 1972-1979, 1990
	14	Electrostatic	1968-1980, 1989
	15	Engineering Documentation/ Drawing Data System (EDDS)	1989-1990
	16	Environmental Control and Life Support System (Development Test Results) Space Station Freedom	1989
	17	Evaporation Six Hour Off Gassing Report for IML-ISL	1965, 1971, 1992
	18	Exterior Contamination Control Plan- Drafts Version 1 and 2	1992
	19	Factors of Safety	1960-1975
3	1	Fuel Cell Regenitive	1985
	2	Goddard Space Flight Center/ Marshall Space Flight Center(GSFC/ MSFC) with Picture	1985-1986
	3	Heat Shield	1960s
	4	Heat Transfer	1961-1965, 1970-1979
	5	Helium	1968, 1995
	6	Human Rights	1990s
	7	Hydraulic Fluid	1974-1975

	8	Hydrazine	1959, 1974-1978, 1985, 1991
	9	Hydrazine Compatibility	1961-1984
	10	Hydrocarbon and Petro-Sulfur Compounds	1962
	11	Hydrogen Folder 1 of 2	1961-1984
4	1	Hydrogen Folder 2 of 2	1961-1984
	2	Hydrogen Peroxide	Undated
	3	Ice	1966
	4	Internal Environment Space Station Atmosphere Monitoring	1985-1986
	5	International Business Machines- Space Station Program Management System, 90BX0013, 901BMX0014	1990
	6	Japanese Off Gassing Round Robin	1985
	7	Jet Propulsion Laboratory- Tests and Off Gassing Results Reviewed and Approved	1985,1986
	8	Kalrez (Sample O-Ring) Material Test Results	1976
	9	Kapton Wire in Records to use for Space Station Freedom	1984-1989
	10	Kel- F Resin- Material Inquiry	1962
	11	Krytox Lubricants	1970-1975
	12	Laminate	1989-1990
	13	Lead	1962-1990
	14	Leak Detection for Space Station	1962
	15	Liquid Fuel	1970-1979

	16	Liquid Locking Compounds	1975-1981
	17	Liquid Metals	1965
5	1	Long Duration Exposure Facility (LDEF)	1990-1991
	2	Lubeco- Materials Test Data	1971,1985
	3	Lubricant Study in Ultrahigh Vacuum and in Various Gas Environments	1965-1966
	4-6	Lubrication and Lubricants Folder 1 - 3	1964-1990
	7	Lubrication Material Company E/M Corporation Correspondence with J.H. Kimzey	1990
	8	Man Rating of Space Vehicles	1990s
	9	Manned Maneuvering Unit International Aerospace Abstracts	1979
	10	Manned Spacecraft Center- High Purity (Potable) Water, Specification for Water with Picture	1960s
	12	Manned System- A Human Factors Symposium and Workshop	1989
	13	Material Considerations for the Low Earth Orbit Environment Long-Life Space Station	1989
6	1	Materials	1981-1991
	2	Materials and Processes Technical Information System (MAPTIS) Materials Analysis Tracking and Control (MATCO)	1986-1991
	3	Materials Processing in Space	1973, 1990
	4	McDonnell Aircraft Company: Members Report to NASA Research and Technology Advisory Committee	1976

		on Materials and Structures	
	5	McDonnell Douglas Space Systems Company MAPTIS- Space Station Material Ratings as Determined by Testing per NHB 8060.1	1997
	6	MDC H4070 External Contamination Control Plan NASA Contract NAS 9-18200 Space Station Freedom	1989
	7	MDSSC-SSD Acronyms and Abbreviations MDC 92H0391	1992
	8	Mercury- Hg Royal Aircraft Establishment Technical Report 77014- Chemical Treatment for Mercury Accidentally Spilled in Aircraft	1977, 1983, 1990
	9	Meteoroids and Meteorites	1970-1983
	10	Metals and Alloys	1988-1991
	11	Military	1960-1990s
	12	Monomethyl Hydrazine	1975-1986
	13	Monthly Reports- Coating for Graphic Fibers Contract NAS1- 14346 July- October	1978
7	1	Moon	1965-1988
	2	N_2O_2 Compatibility- Elastomers	1978-1989
	3	N_2O_2 Compatibility- Polymers and Metals N_2O_2 Permeability	1971-1983
	4	NASA Hydrogen- Oxygen Safety Standards reviewed by Kimzey and Final Copy, Letter to Kimzey	1985

		concerning Final Draft	
	5	NASA- Kennedy Space Center Space Shuttle Materials Control and Verification Program Plan	1985, 1987
	6	NASA Reference Publication 1113 Design Guide for High Pressure Oxygen Systems	1983
	7	Nextel Ceramic Fibers (with Samples)	Undated
	8	NRL Report 5630- Annual Progress Report: Present Status of Chemical Research in Atmosphere Purification and Control on Nuclear- Powered Submarines	1961
	9	NRL Report 6722- Sixth Annual Progress Report Present Status of Chemical Research in Atmosphere Purification and Control on Nuclear Powered Submarines	1968
	10	NSTS 18798 Interpretations of NSTS Payload Safety Requirements Revision A	1989
	11	Nuclear Radiation	1969-1985
8	1	Nutrition	1986-1989
	2	Oceanography	Undated
	3	Odor- Human Physiology	1960s
	4	Ozone	1960-1974
	5	Paper (Non-flammable)	1967
	6	Payload	1960s
	7	Payload Standards Integration Program- Spacelab	1981-1986
	8	Permeability of Rubber	Undated

	9	Planets	1960-1999
	10	Pollution (Air)	1960-1975
	11	Polyimide	1966-1969
	12	Polyurethane (Foam)	1964- 1968
	13	Pressure	1967
	14	Prudent Practices for Handling Hazardous Chemicals in Laboratories, J.H. Kimzey Notes	1980, 1981
	15	Pyrophoric Metal	Undated
	16	Quality Assurance	Undated
9	1	Radiation	1962,1965,1985-1993
	2	SE-R- 0006 Rev. C- General Specification NASA JSC Requirements for Materials and Processes	1982
	3	SE-0-0104 General Specification- NASA JSC Requirements for Flight and Flight Prototype Liquid and High Pressure Oxygen Components and Systems	1983
	4	Shuttle Fluid Compatibilities	1981
	5	Skylink Apollo- Soyuz	1971
	6	Smoke and Smoldering	1969, 1975,1984, 1989,1997
	7	SN-C-0005 Revision C Contamination Control Requirements for the Space Shuttle Program	1992
	8	Solar Absorbance	1992
	9	Solar Alpha Rotary Joint- SARJ Lubrication for Joints	1989, 1977, 1990
	10	Solar Energy	1977,1978,

			1981,1989-1994
	11	Solid Rocket Booster Experimental Techniques for Solid Propellant Combustion	1986
	12	Solvents	1961, 1968,1993
	13	Space Debris	1988, 1990, 1994
	14	Space Station Contamination Form	1985
	15	Space Station Integration Waste Gas System - IWGS	1991
	16	Space Station Organization	1997
	17	STS-1 Mission Commentary Tapes 0021-0037	1981
	18	STS-3 Oxygen Atom Reaction with Shuttle Materials at Orbital Altitudes- Data and Experiments Status	1983
	19	STS-3 Remote Manipulator System Press Kit	1982
	20	STS-5 Low Earth Orbit Atomic Oxygen Effects on Surfaces LEO Atomic Oxygen Effects on Spacecraft Materials	1984
	21	STS-5 – STS 8 a Consideration of Atomic Oxygen Interactions with Space Station	1985-1986
	22	STS-8 Atomic Oxygen Effects Experiment	1985
	23	STS 51- F, STS 61- A, Mission 51-G Crew Debriefings and “Lessons Learned”	1985, 1992
	24	STS OV-102 Space Transportation Systems	1966
	25	Test Plan for Orbital Satellite Servicing Suit Exposure, Test TTA-TP- 2P357	1983
	26	Test Plan Oxygen Tank Failure	1989

	27	Thermally Conductive- Potting Compound- Rubber	1973, 1988, 1990
10	1	Thermal Insulation	1969, 1974, 1992
	2	Titanium	1962, 1968, 1974
	3	Toxicity	1968, 1974, 1980, 1989, 1991
	4	U.F.O.s	1972-1996
	5-6	Space Station Freedom Contingency Operations Scenarios: Mission Operations Directorate Memo 1-1 to 6-16 Folders 1-2	1990-1991
	7	Vacuum Science and Technology- Ultra High Vacuum	Undated
	8	Vapor Pressure	Undated
	9	Wyle Laboratories " Spacecraft Fire Safety Analysis and Planning" NASA Contract NAS3-25367	1987-1989
	10	Zirconium	undated
		Series 2: Flammability	
11	1	AF APL-TR- 65-114 Fire and Explosion Detection for Advanced Flight Vehicles	1965
	2	Carbon Dioxide and Fire Extinguishment in Regards to Space Station	1988-1992
	3	Evaluation of High Expansion Foam for Spacecraft Fire Extinguishment. Contract NAS 9-7983	1969
	4	Explosives Research Center- Flammability of Materials in Hyperbaric Atmospheres	1967
	5	Fire and Their Atmosphere Products in Spacecraft Robert Friedman NASA Lewis Research Center	1991

	6	Fire Detector	1972-1974
	7	Fire Scenarios Space Station Freedom Explosion/ Detonation Scenarios Space Station Freedom	1989-1991
	8	Flammability	1960-1995
	9	Flammability- as Related to Spacecraft Design and Operations	1991
	10	Flammability of Electronic Components in Spacecraft Environments Contract No. NAS12-623	1968
12	1	Hyperbaric Environment and Flammability Concerns, Flammability in Space Station Freedom	1981-1992
	2	Hyperbaric Environment Fire Extinguishment in Regards to Space Station Freedom	1980-1986
	3	J.H. Kimzey Personal Work Journals- Fire Extinguishments on Gemini, Zero-gravity Flammability on Apollo, Fire Investigation Board	1966
	4	J.H. Kimzey Personal Work Journals- Fire Extinguishments, Fire, Zero-gravity film, flammability testing, flammability of materials	1967
	5	J.H. Kimzey Personal Work Journals- Fire Extinguishment, Fire Protection Systems, Zero-g Apollo 6	1968
	6	J.H. Kimzey Personal Work Journals- Fire Hazards in Oxygen Enriched Atmosphere, Apollo 11, Apollo 12, MSFC, Space Base	1969-1970
	7	J.H. Kimzey Personal Work Journals- Work as a	1988-1989

		consultation for flammability and Extinguishment	
	8	J.H. Kimzey Presentation on Fire Hazard Control and Risk Minimization on Space Programs UCLA	1991
	9	J.H. Kimzey Schedule, notes on Zero-gravity Flammability, Manned Spacecraft Center	1963-1964
	10	Medical Hazards of Flame Suppressant Atmospheres	1991
	11-12	Metal Flammability Folder 1 - 2	
13	1	M-TR 65-78 The Effects if 100% Oxygen at Reduced Pressure on the Ignitibility and Combustibility of Materials	1965
	2	NB-SIR 77-1264 Fire Research Specialists Directory	1977
	3	Proceedings of Fire Hazards and Extinguishments Conference AMD- TR 67-2	1967
	4	Proposal 5487.3000, Proposal for Orbital Zero- Gravity Combustion Experiments, MSC 5-65-1408 Cost Proposal, Denial Memo	1965
	5	Pyrolysis Flammability and Toxicological Characteristics of Isocyanurate Foams	1985
	6	Review of Fire and Explosion Hazards of Flight Vehicle Combustion	1965
	7	Skylab ¼ Corollary Experiments Debriefing Prepared by Orbital Assembly Project Office JHK pages 30-42	1974
	8	Smoke Hazards from Burning Plastics	1974
	9	Space Shuttle Environmental and Thermal Control/ Life Support System “Fire Detection and	1971

		Extinguishment.” Manned Spacecraft Center	
	10	Toxicity of Smoke in Zero Gravity, Research for “Spontaneous Ignition,” Proposal for “Spontaneous Ignition”, J.H. Kimzey response to NASA OAST Program	1986
	11	Toxicity of Smoke in Zero Gravity	1986
	12	Workshop of Spacecraft Fire Safety UCLA (with slides)	1991
	13	Wyle Laboratories Spacecraft Safety Consultation Documents over Spacecraft Fire Safety and Extinguishment	
14	1	Zero Gravity Effects on Flammability and Fire Extinguishment, Correspondence Regarding Collaboration of Research Information	1960s-1980s
	2	Zero Gravity Flammability- Phase 3 NASA Technical Report TM X-1992	1992
	3	Zero Gravity (Zero-g), Skylab M-479 Experiment, Zero-g Flight Test Plan Addendum: Flammability in Zero-g	1963
		Series 3: Johnson Space Center (JSC)	
	4	JSC 5322 Contamination on Control Requirements- Superseding JSCM	1974, 1982
	5	JSC 12545 Crew Training and Procedures Division Flight Activities Branch	1980
	6	JSC 13833 Control Plan for Non-flight Materials and	1981

		Equipment	
	7	JSC 17773 Instructions for Preparation of Hazard Analysis for JSC Ground Operations	1984
	8	JSC 19438 Internal Note for Orbital Satellite Servicing Suit Exposure Test. Thermochemical test area (with pictures and test results).	1984
	9	JSC 19614 Materials Branch Procedures for Conducting Flammability, Off-gassing, Fracture Control, Outgassing and Stress Corrosion Payload	
	10	JSC 19649 Space Station Fracture Control Plan	1984
	11	JSC 20149 Space Station Requirements for Materials and Processes	1984
	12	JSC 20584 Spacecraft Maximum Allowable Concentrations for Airborne Contaminants (SMAC)	1990
	13-14	JSC 20810 Handbook of Material Test Data (Folder 1-2) includes microfilm	1985
15	1	JSC 20810 Handbook of Material Test Data (Folder 3) includes microfilm	1985
	2	JSC 23160 Orbiter Avionics Radiation Handbook	10/ 1988
	3	JSC 23213 An Investigation of External Tank Charring During STS 51-J	1987
	4	JSC 30233 Space Station Requirements for Materials and Processes	1986- 1990
	5	JSC 30236 Space Station Electromagnetic Effects Control Process Requirements	1986

	6	JSC 30238 Space Station Electromagnetic Technology-Review of Item Discrepancy	1989
	7	JSC 30245 Space Station Electrical Bonding Requirements (becomes SSP 30245) Space Station Freedom Review Item Discrepancy Forms	1991
	8	JSC 30420 Space Station Electromagnetic, Ionizing Radiation and Plasma Environment Definition and Design Requirements	1986, 1991
	9	JSC 30426 Space Station External Contamination Control Requirements	1986-1991
	10	JSC 30511 Space Station Ionizing Radiation Environment Effects Design Standard	1987
		Series 4: NASA Contractor Reports (NASA CR)	
	11	NASA CR- 98500 60 Day Manned Test of a Regenerative Life Support System with Oxygen and Water Recovery Part 1 and 2 Memo to Kimzey for comments and suggestions	1968
	12	NASA CR-135234 Burning of Liquid Pools Reduced Gravity	1977
16	1	NASA CR-159528 Definition of Smolder Experiments for Spacelab	1979
	2	NASA CR-159642 Feasibility Study of Liquid Pool Burning in Reduced Gravity	1979
	3	NASA CR-182114 Spacecraft Fire-Safety Experiments for Space Station Technology Development Mission	1988

		Wyle Laboratories Contract No NAS3-25067	
	4	NASA CR-185147 Advanced Spacecraft Fire Safety: Proposed Projects and Program Plan	1989
	5	NASA CR-187115 Material Flammability Test Assessment for Space Station Freedom	06/1991
	6	**Series 5: NASA Series Publications (NASA SP)**	
	7	NASA SP-3072 Asrdi Oxygen Technology Survey Volume II: Cleaning Requirements, Procedures, and Verification Techniques (includes microfilm) Notes from J.H. Kimzey	1972
	8	NASA SP-3077 Asrdi Oxygen Technology Survey Volume VII: Characteristics of Metals that Influence System Safety (includes microfilm)	1974
	9	NASA SP- 5012 Effects of Low Temperatures on Structural Metals	12/1964
	10	NASA SP-5045 Contamination Control Principles	1967
	11	NASA SP-5076 Contamination Control Handbook	1969
	12	NASA SP-5109 Systematic Control of Nonmetallic Materials for Improved Fire Safety- A Report	1972
	13	NASA SP-7012 The International System of Units Physical Constants and Conversion Factors (notes and corrections by Kimzey)	1969
	14	NASA SP-8005 NASA Space Vehicle Design Criteria (Environment) Solar Electromagnetic Radiation	07/1971
	15	NASA SP-8021 Models of Earth's Atmosphere (120 to	05/1969

		1000 km)	
	16	NASA SP-8049 The Earth's Ionosphere	03/1971
		Series 6: NASA Technical Manual (NASA TM)	
	17	NASA TM-58246 Oxygen Atom Reaction With Shuttle Materials at Orbital Altitudes	05/1982
	18	NASA TM-78234 Early Space Experiments in Materials Processing	07/1979
	19	NASA TM-100351 Material Selection Guidelines to Limit Atomic Oxygen Effects on Spacecraft Surfaces	1989
	20	NASA TM-100459 Atomic Oxygen Effects Measurements for Shuttle Missions STS-8 and 41-G Volume 3	09/1988
	21	NASA TM-104334"Fire Suppression in Human-Crew Spacecraft" with notes from J.H. Kimzey Author's Response to Kimzey's notes Final Copy	1991
	22	NASA TM-106093 Contributions of Microgravity Test Results to the Design of Spacecraft Fire Safety Systems	1993
17	1	NASA TM X-1992 Comparison of Flame Spreading over Thin Flat Surfaces in Normal Gravity and Weightlessness in an Oxygen Environment	1970
	2	NASA TM X-2174 Burning of Teflon Insulated Wires in Supercritical Oxygen at Normal and Zero Gravities	02/1971
	3	NASA TM X-52757 An Investigation of Gravity Effects in Laminar Gas Jet Diffusion Flames	08/1970

		Series 7: NASA Technical Note (NASA TN)	
	4	NASA TN D-1580 Boundary Lubrication Characteristics of Typical Bearing Steel in Liquid Oxygen	02/1963
	5	NASA TN D-2081 Evaporation Rates for Various Organic Liquid and Solid Lubricants in Vacuum to 10^ -8 Millimeter of Mercury at 55° to 1100°F	12/1963
	6	NASA TN D-5579 Static Electricity in the Apollo Spacecraft	12/1969
	7	NASA TN D-5872 Effects of Gravity on Laminar Gas Jet Diffusion Flames	06/1970
	8	NASA TT F- 13940 The Behavior of a Burning Candle in Gravitationless Space	1973
		Series 8: NASA Handbook (NHB)	
	9	NHB 1700.7A and 1700.7B Safety Policy and Requirements for Payloads Using the Space Transportation System (STS)	1980, 1989
	10	National Space Transportation System (NSTS) 1700.7B (Formally NHB 1700.7A)	1989
	11	NHB 8071.1 Fracture Control Requirements for Payloads Using the National Space Transportation System (NSTS)	1988
	12	NHB 5060.1A, NHB 8060.1B, NHB 8060.1C Flammability, Odor, and Off gassing Requirements and Test Procedures for Materials in Environments that	1974, 1981, 1991

		Support Combustion	
		Series 9: Space Station Program (SSP)	
	13	SSP 30000 Section 4: Space Station Operations Requirements	
	14	SSP 30215 Revision B Notes of correction for Revision C	1988
	15	SSP 30233 Space Station Requirements for Materials and Processes	1989
18	1	SSP 30237 Space Station Electromagnetic Emission and Susceptibility Requirements for Electromagnetic Compatibility	1991
	2	SSP 30240 Space Station Grounding Requirements	10/1991
	3	SSP 30242 Space Station Cable and Wire Design Control Requirements for Electromagnetic Compatibility Revision A	09/1991
	4	SSP 30243 Space Station System Requirements for Electromagnetic Compatibility	03/1991
	5	SSP 30245 Space Station Electrical Bonding Requirements Draft	09/1989
	6	SSP 30262 Architectural Control Document Environmental Control and Life Support System Revision C	1989
	7	SSP 30263 Architectural Control Document Electrical	1989

		Power System Revision C	
	8	SSP 30264 Architectural Control Document Fluid Management Systems	1989-1990
	9	SSP 30285 Space Station Commonality Process Requirements	1988
	10	SSP 30312 Electrical, Electronic and Electromechanical Parts Management and Implementation Plan	1988
	11	SSP 30482 Electric Power Specifications and Standards Volume 2: Consumer Constraints	09/1991
	12	SSP 30510 Space Stations Requirements for Ionizing Radiation Environment Compatibility	08/1991
	13	SSP 30512 Space Station Ionizing Radiation Emission and Susceptibility Requirements for Ionizing Radiation Environment Compatibility	06/1991
	14	SSP 30513 Space Station Ionizing Radiation Environment Effects Test and Analysis Techniques	08/1991
	15	SSP 30523 Safety and Product Assurance (S&PA) Information and Planning Group (IPG) Overview Document	1/1991
	16	SSP 30560 Glass, Window, and Ceramic Structural Design and Verification Requirements	06/1991
	17	SSP 30573 Space Stations Freedom Program Fluid Procurement and Use Control Specification Routine Change Request	1992

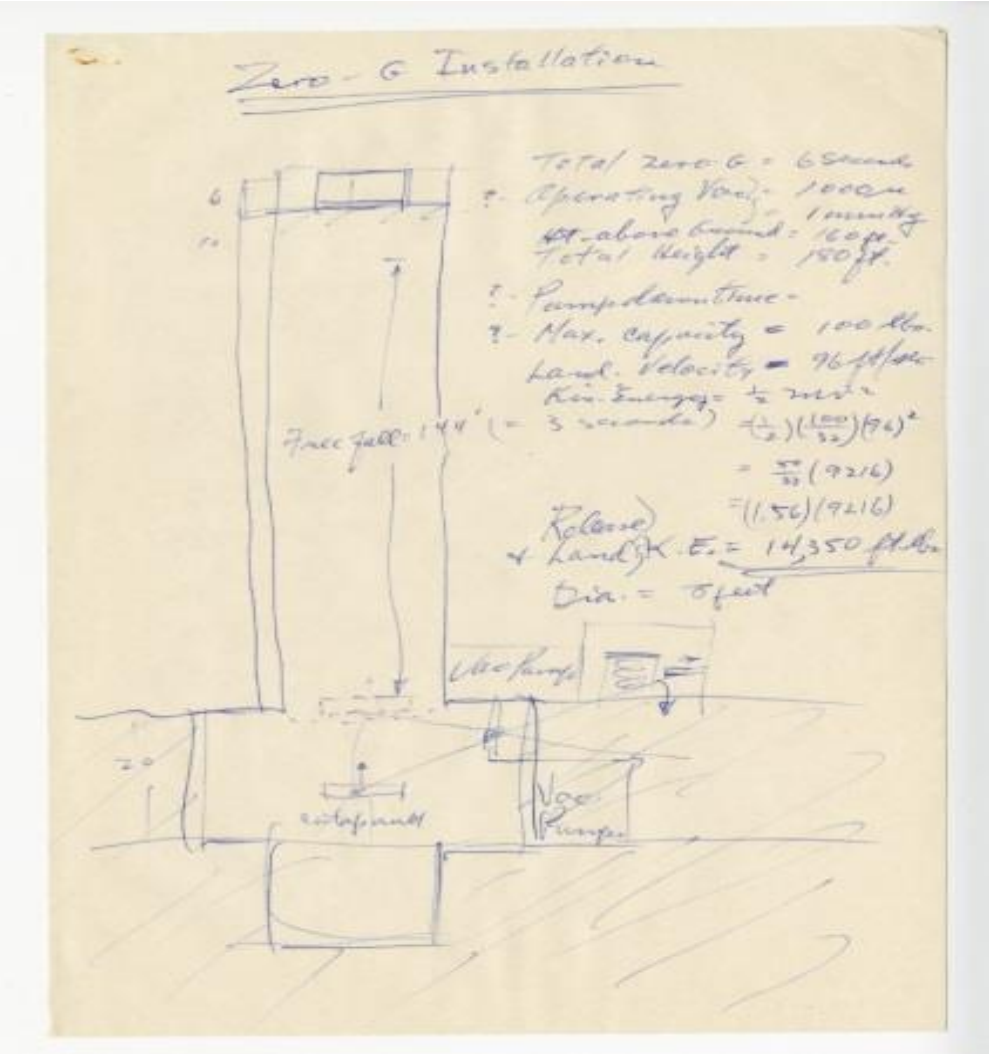
		Urgent change Request	
		Series 10: Technical Report (TR) White Sands Testing Facility (WSTF) (Initially labeled Testing Plan [TP] or Test Directive [TD])	
	18	TD 205-001 WSTF Lower and Upper Flammability Properties of Hydrazine and Monomethyl-Hydrazine in Air of Reduced Pressures	04/1978
	19	TP-WSTF-221 Determination of the Effects of Pressure and Potentially Catalytic Surfaces on the Auto-decomposition Temperature of Anhydrous Hydrazine	1977
	20	TP- WSTF-226 Determination of the Exothermic Properties of the Auto-decomposition Reactions of Liquid Hydrazine Report with photos	1978, 1979
	21	TR-205-003 WSTF Auto-ignition Characteristics of Monomethyl-Hydrazine at Reduced Pressure (with figures and photos)	06/1978
	22	TR-205-004 WSTF Auto-ignition Characteristics of Hydrazine at Reduced Pressure (with figures and photos)	09/1978
	23	TR-225-001 WSTF Thermal Regeneration Temperatures of Materials Exposed to Hydrazine Vapor and Air Mixtures (with figures and photos)	06/1978
19	1	TR-226-001 WSTF The Exothermicity of Liquid	05/1980

		Hydrazine Exposed to Various Auxiliary Power Unit Materials (with figures and photos)	
	2	TR-243-001 WSTF Ignitability of Hydrogen/ Oxygen/ Nitrogen Mixtures at Reduced Pressures (with figures and photos)	12/1980
	3	TR-246-001 WSTF Compatibility of Various Orbital Coolant System Materials with Freon TA (with figures and photos) Memo for suggested edits from J.H. Kimzey	09/1981
	4	TR-255-001 WSTF Freon 1301 Fire Extinguishment Evaluation	10/1979
	5	TR-271-001 WSTF The Exothermicity of Monomethyl-hydrazine and Kynar 460 (with figures and photos)	05/1980
	6	TR-282-001 WSTF Flammability of Vapor Hydrazine and Monomethyl-hydrazine in Air at Reduced Pressures and Elevated Temperatures	10/1980
	7	TR-291-001 WSTF Compatibility of AFE-411 with Hydrazine at Elevated Temperatures	05/1981
	8	TR-293-001 WSTF Thermal Compatibility of Kalrez 1045, FEP Teflon, Dyed and Undyed Tefzel in Hydrazine at Elevated Temperatures (with figures and photos)	07/1981
	9	TR-650-001 WSTF Evaluations of the Fire Extinguishment for Space Station Freedom	03/1992

	10	WSTF The Burning of Metals and Alloys in Microgravity (with figures and photos)	
		Series 11: Personal Item	
20		College Chemistry book of John Howard Kimzey	1932

CHAPTER III:

DIGITAL DOCUMENTATION REPOSITORY



Sketch of a Zero-G installation

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dc.type	drawing

Sektion Physik
der Universität München
Professor Dr. A. Faessler

8 München 22, den 27. Jan. 1967
Geschwister-Scholl-Platz 1

Dr. John Howard Kinzey
Manned Spacecraft Center
Houston / Texas
U.S.A.

Dear Dr. Kinzey,

Dr. Kurt Rosenwald, librarian in the Naval Research Laboratory, Washington D.C., called my attention to your paper "Flammability during Zero Gravity" because he remembered a paper of mine "Das Verhalten einer brennenden Kerze im schwerefreien Raum" published in Die Naturwissenschaften 51, 545 (1964). Dr. Rosenwald wrote me that you probably do not know this paper, so I thought I should send you a reprint. I would, of course, be grateful for a reprint of your above mentioned paper.

Sincerely yours

A. Faessler

Correspondence, Kimzey and Faessler 1967

(Pages 36-39 all part of one series of documents)

ES4

March 7, 1967

Prof. Dr. A. Faessler
8 Munchen 22
Geschivister-Scholl-Platz 1

Dear Prof. Faessler,

The paper "Flammability in Zero-Gravity Environment" was sent to you with my compliments. I am sorry that I neglected to state that no charge was intended.

Since we have a mutual interest here, have you done any further work in this area? I am planning more tests involving equipment in orbital spacecraft. I hope to include fabric nylon, polyethylene sheet material, magnesium ribbon and other materials tested in aircraft tests. It is hoped that an emission spectrometer will be included (2,500 Angstroms to 40,000 Angstroms) to better define conditions after visible light disappears. Other effects will be noted by 16 mm color photography at 16 frames per second. Some tests will be simple observation. Others will be interrupted by adding helium or water, as extinguishing agents. If you have any suggestions, I would be happy to hear your ideas.

Sincerely,

J. H. Kimzey

JHK:ksn

Correspondence, Kimzey and Faessler 1967

Sektion Physik
der Universität
Professor Dr. A. Faessler

8 München 22, den 6. April 1967
Geschwister-Scholl-Platz 1

Dr. J.H. Kimzey
National Aeronautics and
Space Administration
Manned Spacecraft Center
Houston, Texas 77058
U.S.A.

Dear Dr. Kimzey,

Thank you for your letter of March 7, 1967. It is very kind of you to let me have your paper on the flammability at zero-gravity without charge.

No, I have not done any further work in this area. Actually I studied the behaviour of a burning candle during free fall because I wanted to get this demonstration experiment going, and I published my experiments only because of the article of K. Clusius which I have mentioned in my paper.

I should add that there has been some objection against the main point of my argument. A young man at the "Technische Hochschule München" has made experiments with the falling candle in a larger case containing in addition a movie camera which photographed the candle during the free fall. The observations are in agreement with mine: the flame goes out (I am doubtful if this is good English) if the candle is in a little beaker; it keeps on burning if the candle is not protected.

From his pictures the student concludes, however, that the unprotected flame keeps on burning as a diffusion flame and that the circulation does not play an important role. In his opinion the effect of the beaker is the hindering of diffusion and not the screening of the flame from the circulation.

If you are interested in this work I could send you a report of the experiments which are not published.

I shall be glad to hear about your further experiments.

Sincerely yours

A. Faessler

Correspondence, Kimzey and Faessler 1967

P.S.
I am still doubtful about the possibility of a pure diffusion flame without fresh air being transported somehow near to the flame. I underestimated perhaps the importance of diffusion in my consideration, but I am rather convinced that convection in the form of circulation is very effective in an arrangement like mine.

Correspondence, Kimzey and Faessler 1967

dc.contributor	Kimzey, John ; Faessler, A.
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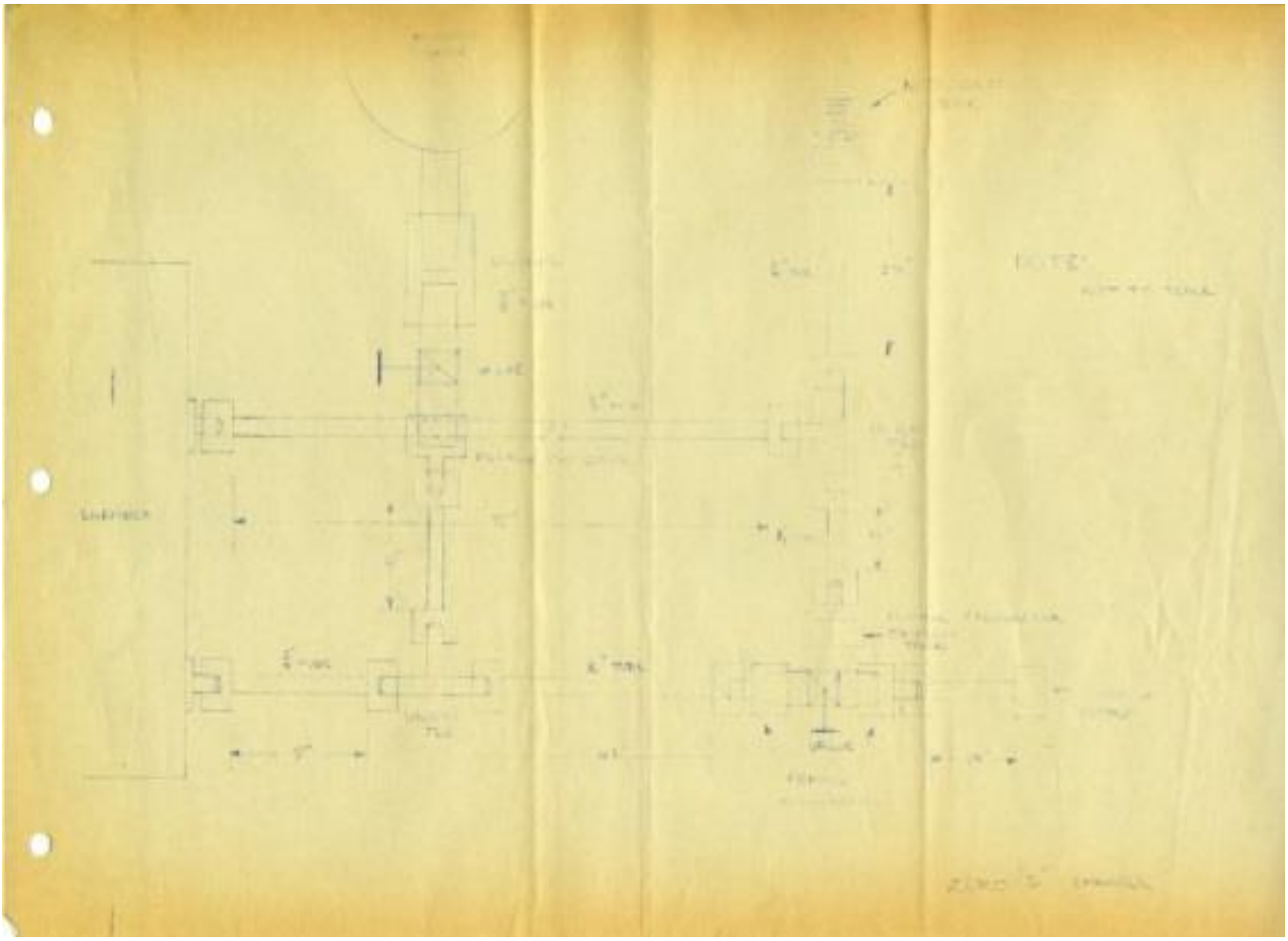
dc.subject	Zero-g and flame diffusion
dc.title	Correspondence between colleagues Kimzey and Faessler
dc.type	letter



Blueprint Zero-G Chamber 1

Note: Original document had begun to fade. Photo editing tool was used to darken the blue in order improve legibility. This also darkened the yellow of the edges of the paper. Compared to the original this was the best option.

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dc language	English.us
dc.subject	Zero-g Chamber
dc.title	Blueprint of a Zero-G Chamber
dc.type	drawing

REFERENCES

NASA Sources

Dethloff, Henry C. *Suddenly, Tomorrow Came…A History of the Johnson Space Center*. Nation Aeronautics and Space Administration Lyndon B. Johnson Space Center, 1993. Accessed December 3, 2017. https://www.jsc.nasa.gov/history/suddenly_tomorrow/suddenly.htm.

Friedman, Robert, and Daniel Uietrich. *Fire Suppression in Human-Crew Spacecraft.* New Mexico: The New Mexico Engineering Research Institute, 1991. Accessed December 3, 2017. https://www.nist.gov/sites/default/files/documents/el/fire_research/R9101044.pdf.

Grimwood, James M. *Project Mercury: a Chronology (NASA SP-4001).* Washington, D.C.: National Aeronautics and Space Administration, 1963. Accessed December 3, 2017. https://history.nasa.gov/SP-4001/contents.htm.

History Portal: Apollo 1963- 1972. Curator and Responsible NASA Official Lynette Madison. https://www.jsc.nasa.gov/history/apollo.htm.

History Portal: Gemini: 1962- 1966. Curator and Responsible NASA Official Lynette Madison. https://www.jsc.nasa.gov/history/gemini.htm.

History Portal: JSC History. Curator and Responsible NASA Official Lynette Madison. https://www.jsc.nasa.gov/history/jsc_history.htm.

History Portal: Mercury: 1958-1963. Curator and Responsible NASA Official Lynette Madison. https://www.jsc.nasa.gov/history/mercury.htm.

History Portal: Skylab: 1973-1974. Curator and Responsible NASA Official Lynette Madison. https://www.jsc.nasa.gov/history/skylab.htm.

NASA Technical Reports Server: Kimzey, J.H. Edited by Gerald Steeman. https://ntrs.nasa.gov/search.jsp?N=0&Ntk=All&Ntt=kimzey%2C%20J.H.&Ntx=mode%20matchallpartial.

"Obituary: John Howard Kimzey." *Houston Chronicle*. September 3, 2004. Accessed December 3, 2017. http://www.legacy.com/obituaries/houstonchronicle/obituary.aspx?pid=25768.

Archival Methods Sources

Archives and Records Management Resources. Archives Library Information Center. 1999. Based on Theodore R. Schellenberg's *Principles of Arrangement*. Washington, D.C.: National Archives and Records Administration, 1951. Accessed December 5, 2017. https://www.archives.gov/research/alic/reference/archives-resources/principles-of-arrangement.html#note.

Balloffet, Nelly and Jenny Hille. *Preservation and Conservation for Libraries and Archives*. Chicago: American Library Association, 2005.

Daniels, Maygene and Timothy Walch. *A Modern Archives Reader*. Washington: National Archives and Records Administration, 1984.

Hunter, Gregory S. *Developing and Maintaining Practical Archives: A How-to-Do-It Manual*. New York, ALA Editions, 2003.

Simmons, Becky. *Archival Arrangement and Description*. 2013. Accessed December 5, 2017. https://rrlc.org/wp-content/uploads/2013/02/ceArchival Arrangement-and-Description2.pdf.

Society of American Archivists' Technical Subcommittee. *Describing Archives: A Content Standard.* March 2016. Accessed December 5, 2017. https://github.com/saa-ts-dacs/dacs.

Society of American Archivists. *Standards for Archival Description: A Handbook* Online version created by Stephen Miller.1994. Accessed December 5, 2017. http://www.archivists.org/catalog/stds99/index.html.