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**ORAL HISTORY INTERVIEW**

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SUBJECT OF DOCUMENT: [use relevant bold-face introductory terms]

Oral history interview with Charles M. Grant, Jr.  
[full name of interviewee]

about MSC Technical Information - collection,  
[main focus of interview]  
Organization, Dissemination.

Title: 1962 - Technical Info Office  
[interviewee's current and/or former title and affiliation]

1968 - Asst Chief for Tech Info Programs, Mgt Services Div  
Admin

Interview conducted by Robert B. Merrifield, Staff  
[interviewer's name/position]

Historian at MSC  
[location of interview]

Transcript and tape(s). [for inventory only: # pages 14; # tapes 1]  
Master 1

CONTENTS:

Biographical - [date/place of birth; family background] \_\_\_\_\_

Education - \_\_\_\_\_

Navy  
22 yrs : *naval Ordnance;*  
Career Path - *Technical publications Division, Naval*  
*Weapons Service Office ; 1962 - MSC*

Topics - *early decisions on <sup>MSC</sup> Technical information organization;*  
*MSC reports (Langley + <sup>Houston</sup>); technical library*  
*Collection and Automation; <sup>library</sup> personnel Criteria;*  
*Midwest Research (Kansas City) as interface between*  
*NASA + industry. Regional <sup>information</sup> dissemination centers*  
*at <sup>various</sup> universities; <sup>documentation</sup> decentralization; Contractors*  
*for reproduction, technical writing, documentation,*  
*library support, etc; unique Coding + indexing;*  
*Earth resources data bank; early <sup>Houston</sup> locations - Franklin*  
*Cpts; Cooperation w/ Rice Univ + Univ of Houston;*  
*"Texas List"; <sup>journal</sup> Back issues collection; literature*  
*searches; isolated files; manned space flight*  
*data mgt. system; <sup>clearing +</sup> processing speeches,*  
*journal articles + report material (NASA Label worthy)*

Classified  
documents

UNITED STATES GOVERNMENT

# Memorandum

TO : BML/Charles M. Grant, Jr.

DATE: March 11, 1968

FROM : AC/Special Assistant to the Director

SUBJECT: Preparation of a History of Manned Spacecraft Center

At the request of Dr. Eugene M. Emme, the NASA Historian, we have agreed to assume responsibility for the preparation of an MSC history. This effort is expected to complement programmatic histories (Projects Mercury, Gemini, and Apollo) which are either in preparation or complete. The MSC history will place primary emphasis on the Center as an institution--its general management philosophy, the evolution of its major organizational elements, growth and modifications of its staff, management of its financial resources and contracts, acquisition of its facilities, and its impact on the economy, culture and society of the community in which it exists.

Dr. Robert B. Merrifield, a professionally trained historian, has been asked to prepare this record of our progress from Langley origins to the present. Since he has been with the Center for over five years, Dr. Merrifield is familiar with many key decisions, events, and trends in the Center's past. However, he will need help from all of us who have been major participants in the life of the Center, particularly in interpreting why and how various forces have influenced the development of the Center as an institution. Your aid and cooperation in this undertaking are vitally important to its successful completion and will be appreciated.

  
Paul E. Purser



UNITED STATES GOVERNMENT

# Memorandum

TO : BML/Charles M. Grant, Jr.

DATE: March 11, 1968

FROM : BN5/Dr. Robert B. Merrifield

SUBJECT: Preparation of a History of the Manned Spacecraft Center

As is pointed out in the cover memorandum, I have been commissioned to prepare a history of the Center. There is a large volume of information (memoranda, blue prints, sketches, etc.) available in the official files and, of course, I plan on exploiting it. However, such information is only the bare bones of history; I will also need intimate detail and personal insight from major participants and informed observers. It is especially vital that I have the benefit of the personal recollection of our key personnel who shaped the management philosophy of the Center during its early formative years. It is for this reason that I would like to have the privilege of spending a few hours with you, to help you put together a statement reflecting your knowledge of the Center's history.

If you have no objection, I will plan on using a tape recorder while I am with you, as it is a convenient way of obtaining a lot of information quickly and economically. I fully appreciate the fact that you have been involved in a seemingly infinite number of major activities, all of which are complex and of such significance that they cannot be disregarded in a Center history. At the same time, I recognize that your time is valuable and limited, and will leave to your discretion what you should put into your statement. I am interested in any information you consider to have been important in the establishment, growth, or maturation of the Center, and invite you to feel free to go into whatever depth of detail you feel advisable and within the limits of your available time. There will be no need to be concerned about grammar, structure, or repetition at this point. I will plan on submitting a transcript of this recording to you as soon as I can get it typed; if you wish, you may then amend or add to it.

I am keenly interested in those minor details that will add vividness and vitality to a historical narrative. For example, a key management decision may have been reached in one of those drab, crowded, stuffy conference rooms of the "Dolly Madison House" (rather than "at OMSF"); or the wisecrack or joke that relieved the tension or boredom or weariness of an important meeting; or the unprepossessing appearance of the Carla-battered Clear Lake Site. Although such details may seem trivial, their judicious use will make the difference between dull and interesting reading.





Because of your position and long association with the Center, it is quite likely that you are familiar with events where personality clashes, conflicts in judgment or other human failings have played a considerable role. The natural tendency in dealing with such sensitive issues is to avoid them or to gloss over them with generalities. Obviously, any history based on this type of treatment will be bland, innocuous, and superficial. On the other hand, if potentially explosive information were to be incorporated into a history, it would certainly lead to embarrassment or more serious consequences to the Center. As an alternative to these two extremes may I suggest the following: I would like to have your statement to be completely candid; I will consider it to be personal and confidential, and will safeguard it accordingly. After typing your narrative, I will return it to you for verification. At this time, I will ask you to indicate those portions of your statement which you regard as "privileged information." They would never be alluded to in any way in the Center history, and would have the sole purpose of giving me the necessary background information I need to write a factual and objective history.

May I call you in a few days to make arrangements that will be mutually convenient for me to see you?

Robert B. Merrifield

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Interview with Charles M. Grant  
3/25/68

I came to MSC in January 1962, from the Navy where I had been in Naval Weapons Services Office as head of a technical publications division. I spent 22 years working in the field of Naval Ordnance, first in design and later on in publications.

I was the first person to be hired in the technical information area. This meant I had to spend some time deciding on what functions should be centralized and what should be decentralized. In those early days when we had really only the Mercury Program, all support was furnished by Langley Research Center. It was important to outline a program that was going to be suitable for the Center. The way the Center developed, would have a direct bearing on how to build up a technical information organization. There were several considerations that affected the course of the organization. First it was necessary to look at the old NACA organization which was primarily basic and applied research. By the time NASA evolved, it strayed away from the basic research into applied research and test vehicles. Hardware development and prototype testing were not found in all of the other NASA Centers. This had to be considered. At that time we had only a strong program office with no central support offices. It was hard to envision how strong the central support office would become with such programs as Apollo and Gemini in the offing and with strong leaders at the head of these organizations.

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The other thing that was unusual for me was to find myself situated on the administrative side of the house, but in a position that required more direction from the technical side than from the administrative side of the house. [but in a position that required more direction from the technical side than from the administrative side.]

We started on two jobs. One involved publishing MSC reports both at Langley and in Houston. For about 6 months we had operations going at both installations. We moved to Houston in June 1962, and found it extremely difficult to find personnel in the Houston area experienced in typing formalized technical reports, especially those with tabular material and formulas.

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The other matter that required my immediate attention on coming with MSC was the need to plan a technical library. The Langley Research Center library collection consisted primarily of reports with little emphasis on books and journals. Two things were important in laying out the library: one was that we needed a broad collection of journals and books as well as reports, that this collection should be centralized, and it should be funded from a single source. The next major decision was whether we should automate our library or follow a conventional manual approach. I toured several libraries IBM, Douglas, Lockheed, NOL in Washington, and other, to study their operating techniques. It was decided we would follow an ADP type approach to our circulation system, our reference system, and for our journals. All personnel hired into the library would either have some experience using automated systems, or at least would not reject this type of library. It was a real problem to find people who would not reject automation in the library.



We hired two NASA professionals; the head librarian came from industry; three other professionals came either from the Air Force or from outside government.

We established firm requirements for our professional people: We wanted a head librarian with a Masters in Library Science and an undergraduate major in one of the basic sciences. All the reference librarians had to have degrees in the sciences, and if they had their Master of Science Degree, so much the better. This was not true in the books and journal side of the library. Our feeling was that this could <sup>best</sup> be handled by someone with a Library Science degree and formal science education as such wasn't required.

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From January 1962, to June 1962, we utilized the Langley Research Library and their material. However, when we moved to Houston it was necessary to have a reference collection of our own. In an effort to have something, or at least know what was available, we filmed the 1,691,000 library cards in the Langley Research Library. Incidentally, the camera used to film these cards was unusual. It filmed about 200 cards a minute, and as the cards passed through the camera, it filmed both the top and the bottom of the card at the same time. After we moved to Houston we indexed the film. It has the early aerospace material up to the advent of the Star material, which started in 1962.



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About mid-1962, Headquarters began talking about a technology utilization program to repackage material generated from our aerospace research into a form that would be suitable for use in industry. In September we hired John Wheeler to run this program for the Center. It was new to government. Mr. Webb felt that some of the research and development even though it was oriented toward the space program was applicable to industry in such things as processes, materials, and techniques. It's very difficult to pull these things out of research reports, or to draw it out of some technician in the shop, or in the laboratory and then assemble such information in such a form that it can be utilized by people in an industry unrelated to space. In an effort to do this, NASA drew up a contract with Midwest Research in Kansas City. Really Midwest was to be an interface between the NASA material and industry. Many techniques were employed to interest industry such as symposiums and conferences with personnel in industry at the corporate level, the chief engineer level, and the marketing level. While large corporations like RCA and GE could afford to do their research, a large group of engineering firms were not. This was the group of companies NASA wanted to help with this program. Also space research was primarily being accomplished in the New England areas or in California. Very little was being accomplished in the Midwest. This was the reason why the Midwest was chosen as a starting point. Also, NASA had a close tie with the universities, and studies showed that top university talent was no longer staying in the Midwest but was moving east and west. Hopefully, this would help keep

them in the Midwest. This program had many problems in evaluating the material as to its worth to industry - how would we find people in all fields who were able to screen the material so there was a reasonable chance of being used up by industry, and how would we report the information to them. Also how would we disseminate this material, and would we plan on giving them just a feel for the product or the technique, and what additional material would be required and what would this cost? What fields would be most fruitful for this endeavor and should we concentrate in certain fields? All these pressing questions required answers.

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As a means of disseminating material, following the Midwest Research experiment, NASA set up regional dissemination centers at the University of Indiana, Wayne State, Penn State, North Carolina, Connecticut, and the University of California. Outlets of this kind were supported by NASA Headquarters and their job was to disseminate the technology utilization material to industry in their area and, hopefully, sell their services on an annual fee basis. It was hoped that the effort would become self-sustaining within 5 years. After that, industry would bear the cost. We have found that in certain areas there is a tendency to become rather specialized: Penn State in coal and fuel, Wayne State more in engineering mechanics, and mechanisms; University of New Mexico in natural resources; University of Georgia computer technology, etc. This program is still alive and since it's still in a research stage, it's still changing shape and form.

Very early we believed it should be possible to make engineering documentation (standard specifications, drawings, handbooks, all of those things related to building hardware) a centralized function.

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However, each of the program offices insisted on handling its own material. This situation continued until the Apollo Program Office found itself flooded with such documentation and now some of these functions are being consolidated under Technical Information. There are between 600,000 and 1 million drawings alone of the Apollo material.

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For some time it has been evident that there is a need to provide more than just editorial and publication support to help the engineers generating both informal and formal reports. In an effort to meet this need, writing talent has been provided through a support contractor. The basic purpose has been to float to the surface all material that might have some value to the Center during the life of a program, especially material that might have interest over a long time span. Back in July 1964, we started contracting with Southern Microfilming for microfilming and reproduction of material from the computer. In September 1964, Wolff<sup>e</sup> Research assumed responsibility for this function, and in September 1, 1965, as part of a larger 3 year-contract, this function passed to Federal Electric<sup>Corp.</sup>. In addition to microfilming and micro-reproduction, Federal Electric did technical writing, editing, publishing, library support, and engineering documentation and retrieval. The contractor currently employs a little over 200 people. This contract is rather unique. For example, we have taken Apollo engineering documentation and have prepared an index for it that agrees with our organizational philosophy here in the Center. The documentation that comes from hardware contractors--NR, GAEC, TRW, and many others--is indexed using the standard classifications such as corporate author, personal author, contract, etc., and as well catalogs the material so that our program people and our <sup>Sub</sup> systems managers



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can find what they need. The file is arranged so that if they are looking for a subsystem such as environmental control system, they are able to pull material pertaining to the development of that system from its beginning all the way through the Apollo Program. If they are looking for such information only on Flight 204, Boilerplate 23, etc., they will look under 204, Boilerplate 23 or whatever airframe it might be. The program people can find everything under a particular Flight or a subsystem manager will be able to find his material as it develops. This is a unique method of indexing and coding materials. In addition we have developed another file which we also believe is unique. This is the earth resources data bank. The uniqueness of this file is twofold. First, we have catalogued and indexed all material by the particular segment of the United States to which it has reference; this coverage eventually will be extended to cover the entire <sup>Free</sup> world. Second, we have included in the data bank every piece of information that applies to this program--all reports, all planning documents, all film, all tape data. Everything has been indexed and coded. We have not seen this in other major programs.

Before the move from Langley to Houston we had a fairly sizeable collection of classified documents, and LRC made NASA documents available to us. After deciding that the floor loadings in the Rich Bldg wouldn't support this load of files, we moved to Farnsworth Chambers Building. We set up offices in the Farnsworth Chambers Building in June 1962.



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It was the only one of our lease buildings that had a vault for our classified material. We stayed there for a short period, and then moved to the HPC Complex. In the next few months we moved no less than 4 times within the HCP Complex. Following that we moved to the Franklin Apartments. They were unfinished, and we were the first people to move in. We were allocated 8 would-be apartments all in a row, and all were unfinished. There was no airconditioning, no lights, and I guess the only thing working was the plumbing. A single string of lights was run from one end of the building to the other with one lightbulb in each room, because the power wasn't on in the apartments. There were no sidewalks outside the building--just mud. [For this space there were 2 bathrooms; one was located next to my office. We marked it "ladies," while the one down the hall was marked "men" because it had a urinal. The ladies wouldn't use the one next to my office because all sounds easily carried through the walls. We eventually had to give them the men's restroom and let the men use what had formerly been set aside for the women. My office was located in what would have been a bedroom and in the outer office (the unfinished living room-kitchen area) were my secretary and other staff members. So whenever I called my secretary into my office, one could say I was in the bedroom with Elizabeth.] When we began to outgrow the Franklin Apartments, we moved part of our people to the VA Bldg downtown. By this time, the library had large and continually growing inventory of books, journals and classified material. We had something on the order of about 40-50 locks to open every morning to get to our classified material.

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We moved to Bldg 12 at the permanent site in December 1963. We were one of the first organizations to move in. For a short while we had ample room for our classified material in the vault and for our personnel. But with a growing organization and an expanding supply of library materials, and sharing Bldg 12 as we did with the computer division, which was also growing, Bldg 12 finally became too cramped. In April 1966, we moved out of Bldg 12 into Bldg 45. Prior to that we began using Bldg 122 at Ellington AFB to house all of our microfilming operations. With all of this moving, it was imperative that we use shelving that easily moved by our personnel.

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There were also other problems connected with the library. During the period when our collection was still small, although expanding as fast as we could go with the personnel available, it was necessary for us to draw on the facilities of universities in the community. We developed a close working relationship with the libraries at Rice and the University of Houston. I would like to emphasize that librarians and people working in information science are truly service oriented. When I say service oriented, I mean they are always trying to help someone. And this was the attitude we consistently found at Rice and the U of H. There was never a no given to us. They were always willing to help us regardless of the demand, and as a young Center we placed heavy demands on both of those universities. It was primarily a one-way street as well, since only in recent times have we been able to loan them material.

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There is another facet of our relationship with the universities that indicates the kind of cooperation that exists. The Houston list, or as it is now called, the Texas list, is a listing of all holdings of journals in the libraries of Texas colleges and universities, in the technical libraries of participating industries, and MSC. A person can look at this list and find almost any journal that has been published if a copy is in a participating library in Texas-- who has the collection, and what portion of the collection is in their file. This type of cooperation between librarians is a great advantage to users.

We have spent a great deal of time, effort, and money in reviewing the future mission of the Center and in collecting back issues of journals that appear to be significant. We have an excellent group of indexes such as Chem abstracts, and Index Medicals, as well as the general indices. We have something on the order of 40-50.

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As a technical information center at MSC we have forged ahead in many areas. We are probably the only technical information group at any Center that has a circulation system that's automated. We have an automatic overdue system, we produce catalog cards by computer, we order our journals through the use of the computer. Each month we purge the computer and ask it what journals we are scheduled to order during the month. The order is completely filled out except for the accounting code and the company's name and address. We are doing literature searches by the computer and selective dissemination of what we like to call functional information profiles. Although we have had problems with computer time, and we've had changeover problems

from one computer to another, this has been a very satisfying effort. We have had people in the computer division who have had a real interest in what we are doing probably because although this is not new we are in the vanguard of such work, and there is a lot of interest in it. We have been quite fortunate in being able to keep these programs alive and now that the size of our collection is so voluminous, it is much cheaper for us to use the computer than it would be to use a manual type approach in accomplishing the many functions we have. We have close working arrangements with the Aerospace Medicine group at Brooks AFB; the National Institutes of Health in Washington; the various agencies interested in aspects of natural resources, including geology, geography, oceanography, land ~~management;~~ measurement; we work with AEC in the SNAP Program, and with the Air Force and Navy on suit design for example.

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Located as we are in the Administrative Directorate is unusual for our kind of an organization. We are primarily a technical information service, and entirely technical except for a small amount of management material, and even it has scientific and engineering implications. There are management problems in running our organization that are difficult to understand unless one knows and understands its background. What I'm trying to say, is that it becomes difficult in some cases for us to communicate with administrative personnel who are not familiar with the requirements of users of our material that we have to handle on a day-to-day basis. Nor do they understand the response time required to process requests for such material or how it must be organized so as to



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be readily useful to the engineers, technicians, or scientists. Essentially our problem is that we serve the technical side of the organization but report to the administrative side. Personnel with scientific or engineering background are reluctant to locate themselves on the administrative side of the house. This has created a problem in hiring talented personnel. Also it's a problem from the standpoint of obtaining personnel from civil service registers. For the most part engineering personnel are listed on engineering registers, not on technical writer registers. Although civil service permits the hiring of personnel from the various technical registers if the subject matter demands it, it's difficult to get Personnel to allow us to do so. Despite these problems, there has been very little interference in the development of this technical information program up to this time.

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From the beginning we have attempted to collect in one point all of the technical information that is being generated by the Center, both inhouse and under contract, and to have it readily available for use. From time to time it has been considered necessary to have small files, isolated files, satellite files, call them what you like, in various places throughout the Center. This has been a problem in the long run, as in both the Mercury and the Gemini Programs, whenever material was retained, housed, or controlled by the Program Office, when the program office went out of business it took with it

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all the data it had on that program. This Center cannot afford that kind of operational philosophy. There must be some way to collect and maintain all material that has some value for future program. This material must be sorted, indexed, and coded so that it will be readily available for future use. We still have isolated files throughout the Center with no central coordination or control.

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A manned space flight data management system is currently under consideration by the Office of Manned Space Flight. Should this go into effect there will be a manned space flight data manager in NASA Headquarters, and a data manager at each of the three MSF centers: Marshall, the Cape, and ourselves. The primary purpose of the system will be to consolidate and "bubble up" all the requirements that are being asked for by personnel in the various Centers. I think this system will be operational in about two years.

As far as layout of our facility is concerned, we should have requirements for documentation and data centralized. This would be a list in the form of a family tree. Adjoining that we should have all the engineering documentation and data, including drawings, specs, standards, facilities, GFE equipment, etc. Adjacent to that would be the technical library that would house research reports, books, and journals. This would seem to omit photography and computer tapes. However, that material should be a part of the indexes located in the engineering documentation group and technical library.

One of the concerns of the Center particularly since we in manned space flight are the source of considerable public interest, had to do with the release of information. NACA was very prompt and very

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good about reporting the research accomplished at its laboratories through formal reports--technical notes, technical memorandums, technical reports. However, our Center found itself in a different position. Our management wanted to control the release of all material for two reasons. One was that we wanted to be sure that the material released was within the policy guidelines set forth by NASA Headquarters and our Center. The other was that the release of information is significant in the evaluation of technology. The most common transfer of information occurs through speeches delivered to a professional society in printed form as a journal article, although publication of journal articles is normally 9 months to a year after submission. MSC took the position that we should control the dissemination of information by requiring everyone delivering a speech or publishing a paper to come through technical information to insure by proper signoff that the writer has met policy commitments and to insure that all published material or speeches are worthy of the NASA label. Therefore, our editorial effort has been very strong, firm, and active in the processing of speeches, journal articles, and materials for formal reports. We have also been active in processing material used in conference proceedings, both classified and unclassified. This kind of editorial effort has allowed us to standardize certain things within the Center, but there have been problems, particularly since deadlines are usually tight and clearances and approvals are difficult, particularly for those who are making presentations outside the U. S. and especially in countries behind the Iron Curtain. As a matter of convenience, our editors process and review all graphics and presentation material that go along with speeches.