

INTERVIEW WITH DR. CHARLES A. BERRY  
October 30, 1967

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My first tie with MSC or STG started while I was in the Air Force as the Head of the Flight Medicine Department at the School of Aerospace Medicine at San Antonio. I had been involved at that time in some specialized selection programs, in trying to find suitable people for particularly difficult jobs, like flying high performance aircraft, space cabin simulators subjects and things of this sort. We were looking ahead to the space activities that we are now engaged in. At that time the Man in Space program was being considered, and it was one of the early precursors of Mercury. Because I was involved in the Aeromedical consultation service at SAM, I was asked to redo the physical standards for the Air Force Manual 150-1.

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Probably as a result of all these things, one day I got orders to appear at Wright-Patterson AFB in civilian clothes. I didn't know why I was going there until I arrived. I found I was to participate in the examinations and planning of how things were going to be done for the selection of the original seven astronauts. Following that activity, I ended up in the Surgeon General's Office in Washington. Bill Douglas, who was in the Surgeon General's Office, and I were under consideration as candidates for flight surgeon to the astronauts at STG. The decision was made that Bill should go with STG and I was to replace Bill in Washington. I moved to Washington. As time went on, the Med Group at STG was augmented with Stan White also borrowed from the AF and who had also been involved in the early space activities, but at Wright-Patterson rather than SAM. Stan was more hardware oriented, doing a lot of work

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with the suits, etc., at Wright-Pat. He and Bill Douglas were at STG in really separate roles. Stan was supposed to look after the equipment side of the house and the general medical aspects and Bill Douglas was in sort of a squadron flight surgeon role. There were a lot of things that had to be done about developing techniques and procedures for monitoring crews and flight and I was asked to work with Stan and Bill to develop these procedures. We selected some medical monitors from the Army, Navy, and AF, and I did much of the actual selection of the AF monitors.

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The monitors were to go to the various stations on the Mercury network. We decided we wanted people who had had experience monitoring people in tests of various sorts, whether it was in altitude chambers or space cabin simulators, centrifuge runs, etc., so we had people who had some type of tie to that experience. Interestingly enough, the Army group that was selected had none of this. The Army people selected some excellent people--were internists and cardiologists in general but they had had no previous tie with aviation or with any sort of monitoring of this type. They were strictly clinical oriented. Those selected turned out to be just tremendous guys after we got them oriented. They were pretty disgruntled about the whole affair at the beginning but as they became oriented toward the program they found it was a very good assignment.

I ended up going through a training course--a week at Partick and week at Langley trying to get a baseline for the people who were going to be the monitors. That's where we first met some of the people who were involved, particularly the Army group. We then had a series of other types of training activities that were involved and we went to a number of sessions like the centrifuge runs at Johnsville, and some of

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the activities that occurred at Langley and some at the Cape. We participated in these exercises in order to gather baseline data and establish the techniques we might use. Then it came down to trying to put these techniques to work on an actual station and the Canary Islands was selected as a basic station. I was asked to go out with the team that was going to operate that station and try out these procedures that had been tried out in a lab situation back at Langley. All this time I was on loan from the Air Force, which was my real job in the Surgeon General's Office. After that I was tied up with monitoring of the flights, first the unmanned flights, then the chimp flights and finally the actual manned flights. I was at the Canary Islands several times for simulations with aircraft, and several times for one of the unmanned flights and an orbital flight. I was at Bermuda for John Glenn's flight. We had a delay and when it didn't come off when it was supposed to, there was about a week hiatus and we came back to the mainland. I was asked to come down to Langley. I talked to Chris Kraft, Walt Williams, and John Hodge and Bob Gilruth. They had decided they could not continue to have the current organization in the STG. At that time, Stan White had the responsibility for carrying on the life support activity which involved some ongoing research and get crew equipment ready, the suits, environmental control system, and anything that had to do with crew equipment. It was then called Life Systems. They felt they couldn't continue to do that and support the missions the way they were and that there was a need for a medical operations organization. I don't know how much of this push came from the medical side of the house and how much of it came from Walt and Chris in Operations. I was asked if I would consider coming to do that

job that they were going to try to separate these functions. I talked to Stan and to Bill Douglas. Bill had decided to go back to the Air Force. I felt I didn't want to give up my Air Force career and I told them I would come only if they would get the Air Force to send me on a duty tour. I had been spending about 50% of my time up to that point with NASA instead of doing my AF job and I thought it was a reasonable thing to do. I had a responsible job in the Surgeon General's Office in Flight Medicine and I had been fighting hard to build an aviation medicine program within the AF structure at that level. But at the same time I felt this was the thing I wanted to do and should do. The NASA people went to the AF. Chuck Rhoadman, then head of Life Sciences at Headquarters, and Brainerd Holmes, head of OMSF, submitted a formal request to the AF to have me assigned on a three-year tour. There was some shilly-shallying over whether the legitimate space was available and this sort of thing, but finally the proper paperwork got through. General Niese, who was the Surgeon General then, decided he would let me go on this particular assignment.

At that time there was a battle in progress between the AF and NASA over roles and missions, etc. because the AF still felt they had been robbed of the space mission by NASA and there had been a good deal of controversy over what NASA was going to be allowed to do in the aerospace medicine field in particular. The AF had been in this area for a long time and had the experience and therefore felt NASA shouldn't be allowed to duplicate this capability. The medical people I've mentioned were all borrowed AF people, except Bill Augerson from the Army. In addition, NASA hired Dick Johnston as a civil servant. Dick was then working with the

Navy. Other people came from the Navy labs, such as Ted Hays. The suit group that was hired had worked on the Navy suit which was used as the basis for the Mercury suit.

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Clark Rant had been the first associate administrator for Life Sciences. That organization wasn't supposed to have anything to do with Mercury because it was formed after the STG was off and running. There was a young physician named Pat Laughlin who came to Life Sciences with Rant and he was sent to Langley to work with the group. That setup was the cause of some of the difficulty that we were in medically within the agency because here was a man who was brought aboard who was a very good scientist and a good university researcher but he really had no understanding of operational problems. That sort of a very difficult beginning didn't create any goodwill with our engineering counterparts. Then just before Al Shepherd's flight, the PSAC group had a hearing in which it attempted to review preparations for the first manned flight. Everything got by fairly well except in the medical area. A medical committee of PSAC, which was generally composed of very good scientists and physicians and whose background was program or clinic-oriented and knew little about operations, were about to blow the whistle on the first manned flight, particularly because there was no way to measure blood pressure of the astronaut. Dr. Gilruth still speaks vehemently about this. Score one against the medics, for they fouled the works for themselves. There are natural difficulties in developing rapport between the crews, the engineers responsible for the program, and the medical people. This problem didn't get all of the understanding it should have by the people involved. I am sure everybody was pretty much involved in his own area or problem, ...

and the enormity of the task to be done got in the way of the relationships that could have been developed, and should have but weren't.

Again a strong conflict had developed between Stan and Bill over <sup>Douglas</sup> who and how the overall medical support activities, the flight monitoring etc., and crew care would be managed. Crew care, in particular, was a problem as Bill considered it his exclusive function. In part, it was difficulty between the two people involved, as individuals. Because of this, I was concerned about how things were going to work out if I did take this particular job. I talked to each one of the original seven astronauts and asked them what their views were, considering the ties they had had with Bill. It was much more important at that point in the program than it is at this point. They felt this would be a good thing and I was acceptable. A Center was being discussed at that time and there was some question about where this function was going to be located within the new Center. Walt's point of view (and I concurred with it) was that the medical program would have to be totally operationally oriented. I was supposed to exert my efforts as flight crew surgeon for the care of the flights crews. Care of the crew families had sort of been catch as catch can, but not really a responsibility. I felt that it was a necessary part of the responsibility. I also felt we had to have all the flight monitoring activities--the preparations for flight, the recovery, etc. That is the kind of effort that was involved. It was called Medical Operations and as the Center evolved it turned out that that aspect of medical was under Walt Williams who had all the operational responsibility of the Center and the medical development aspects (what was at that time Life Systems under Stan White) came under Max Faget. It became very

obvious over a period of time that this was an unrealistic sort of a division. It did accomplish one purpose--it allowed us to emphasize the operational support which was necessary and I think we gave that support very well.

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The first flight after this organization took place was Scott Carpenter's, which was followed by Wally's and then Gordo's flight. We began to get things fairly well in line as to how we were to do the tasks necessary to support the crew. I had worked the last couple of months before I came down to get Dwayne Catterson to come into my organization. He arrived at the same time I did, and he has been with us since. He came from a residency in Aerospace Medicine at Lovelace Clinic.

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The bulk of our people were borrowed. We had some from the Air Force, some from the Navy, and some from the Army. Bob Devine was in the Navy. He transferred from Stan White's division and became our administrator. We got Dick Pollard from the Army, George Smith from the Air Force. He was in Houston in January before we moved down in July, and became a part of my organization once it was formed. Dwayne Catterson and I were the only permanently assigned personnel, and almost everyone else had to come from Stan's group in Life Systems. We got Howard Minters who was a resident assigned on a tour of duty from the Air Force, and he stayed on with us.

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During that first year, I had seen a real need to get some additional people because we weren't able to do all the tasks we needed to do by far, so we got Dr. Coons whom I had known for a long time. He was from Canada and had been at Harvard with me. He had been in the RCAF and he and I took a long course in Residency in Aerospace Medicine at Harvard at the

same time. After he had returned to Canada he was later stationed in Washington at the same time as I was in the Surgeon General's Office. I talked with him and got him to join the group after about a year.

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It became obvious during that year that it was going to be very difficult to separate the kind of measurements you wanted to do from an operational point of view from the kind of things you might consider to be "medical experiments" or things you were trying to do that were considered experiments. That's a very artificial kind of a separation and it appeared that what was happening was Life Systems, which had retained the people who were involved in medical research and hardware-oriented, life-support, crew-equipment type people. We had a fair amount of difficulty during those first few years with this sort of interface and it caused us difficulty in our relationships with the crews. It was a totally unrealistic way to look at medical support because if you are going to provide medical support it has to be an overall type of thing and you can't arbitrarily draw a line and have anybody stick to it. We focused our attention on the operational aspects of medicine, but as we began to get those in hand it became obvious that the organizational arrangement was bad. To have people on the research side of the house doing research which wasn't oriented toward what the operational problems were because they weren't aware of what the operational problems were made an impossible situation. They were trying to develop something and then would hand it to us to fly.

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There were other problems as well. When I had first come with the organization we had not had any occupational medicine coverage within the Center, and when it was later added it was kept separate from both my



function and Stan's. Stan didn't want anything to do with it and I didn't either at that time for I had more to do than was possible and it was something we couldn't take on with the people we had. The Occupational Medicine group was located in The Safety Office. They had begun negotiations with a doctor at Huntsville, who was on a contract basis there, to do some occupational medicine at MSC. John Kanak, head of Safety had filled the void and had gotten to the point where he had hired some nurses and a doctor. The doctor visited the Center several times a week. This was far from an ideal way to handle the function as far as the Center was concerned. Marty Byrnes and Walt Williams talked to me a good deal about it. We finally talked with Dr. Gilruth and it was decided that I had better do something about it. I would go ahead and accept the occupational medicine area as a function. In doing that we also ended up with the safety program as well because it was hard to separate the two. The only reasonable way to solve the problem was to take John with us. Otherwise we would end up battling him all the time. That bought us a lot of problems, some of which we are still living with, such as Shell Martin. There were three key people in the Kanak operation, Kanak was head of Safety and he had acquired a radiation physics man, Shell Martin. He had also acquired an environmental hygienist, Chuck Brugtholdt. These guys except Kanak are still in our organization. We were able to show there was a separation which was possible between safety, environmental hygiene and the radiation control area. It was obvious that radiation control and environmental hygiene were occupational medicine, whereas safety was not. There has to be a large interplay between the safety people and the medical people, but you don't need to necessarily have the safety program under

the medical office. As things got tighter for personnel and there were a lot of problems associated with the safety area. We were constantly having some difficulty manning the Safety Office and getting the job done because of the hiring freeze and the shortage of people, and we decided we could probably make a change that would be better for the Center if we allowed administration to take back the safety function. That was done, and it was put under Don Blume. The environmental hygiene program grew and became a real problem for us. We acquired a physician, Phil Pease, and built up nursing support, X-ray, and lab and supporting activities we needed to do this function. There was a need for executive health programs and other things which we felt we should furnish the Center. We got into a personnel bind about October 1966 and we had to make a painful decision on how we could handle the problem. We were asked to come up with a list of functions that could be contracted. Our first approach was that nothing that we did could satisfactorily be contracted, but then we were told to contract that type of work which we could easiest afford. The one area where we could make a case was for occupational medicine. We felt certain it wouldn't be as good and it would cost more to run the program if we were to contract it, but it was the choice we had to take. We were directed to do so and we've had a contract now for a year with the Kelsey-Seabold Clinic. It's working out pretty well but as we said, it is costing more money. The care has been good, and increased numbers of people have been served.

Early in the program all of the medical people were borrowed. I guess Dwayne Catterson was the first civil servant we hired. He came the same time I came fulltime with the Center. After a year on loan from the AF,

it became obvious to me that the military would not leave me here indefinitely. Bob Gilruth and Walt Williams and Brianerd Holmes, George Low, and Webb, all talked to me about the possibilities of changing from a military detailee to a civil servant. It was clear to me that this was something I ought to do if there was going to be a viable medical program within the organization. Therefore, I had to make a choice. Either it was going to be me or they were going to have to get someone else to do it. It was one of those times in life when you are forced to make a decision that not only would have an important bearing on my career, but would also have important implications for MSC as the Center might be unable to get someone with equivalent aerospace medicine residency training, background, and interest, as such people are hard to come by. I felt it was something I really had to do as far as the country was concerned and made that decision to do it. I will never forget the three hours I spent with the Surgeon General telling him of my decision. Mr. Webb offered to call him, but asked him not to as I felt I should do it myself. That was a torrid three hours I spent in his office. He, of course, enumerated all the reasons why I shouldn't do what I was planning, but after I indicated I was firm in my decision, he has been one of the greatest supporters that the manned space flight medical program has had. He is retired now, but still a avid supporter. It was a difficult decision but certainly one I feel was right and proper and it has turned out to be the thing I wanted to do and it has been good for me, and in the long run for the program.

311 | The medical organization continued to function principally as a flight support group. We were very operationally oriented and primarily concerned

with the monitoring of the flights, the medical training of the crews for the flights, the detailed preparations of the crews, and in borrowing people from the DOD and even from Australia to help us with the monitoring and with our medical coverage both at the launch site and around the world. In the Mercury Program we were principally concerned with safety determinations on the crew because we were not able to do any sort of detailed experimental medical procedures. We were trying to get information which would allow us to make decisions to take the next step--to go for a longer period of time. We had to make that decision after each of the flights based upon the information we could obtain. There was a minimal amount of information on heart rate, respiration rate and blood pressure. There had been a lot of trouble with blood pressure all during the Mercury Program. We also obtained some information on pre- and post-flight, but these were for the most part minimal. We turned up some findings on the body systems, particularly the cardiovascular system, and thus at the end of the Mercury Program which was about the end of the first year of our organization, we were faced with a decision as to whether we should have another Mercury flight. We went through a good deal of soul searching about that. We felt it would be useful as there was going to be a major gap between Mercury and Gemini. We did a lot of preparation on the medical reasons why we needed to have another Mercury flight to get that data. We could then be laying the groundwork for the Gemini Program. We had a post-Mercury flight planned which was called MA-10. We held quite a discussion session in Mr. Webb's office, and it came down to the medical reasons for doing this flight and the operational reasons of keeping the teams together. The decision was made everybody with experience should

get onto the Gemini Program so it could get going earlier. In retrospect, that was a very wise decision. The only problem was we had to have medical information in more detail than we had in 36 hours of experience of Project Mercury. We didn't want to jump from that up to our seven day Gemini flight. I wanted something in between. As a result, the Gemini Program was modified to give us a four-day, then an eight-day, and finally a 14-day flight so we would have this doubling experience as we went along.

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In the Gemini Program as far as medical experiments were concerned, we were to have a program with three long duration flights that were to be flown primarily for medical purposes to determine how long could man go. These were big time increments particularly the 14-day flight. It was extremely important to us and we felt it was necessary to develop a series of medical experiments that would help us with more than just the operational information that we were able to get with flights. Experiments were developed to particularly look at the cardiovascular system. Some looked at the vestibular system, some to the musculaskeletal system. We did some extension of the blood and biochemical studies because these would help give us answers about some of these other larger problems. This turned out to be a very good program.

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It caused us to look pretty hard at our organization and we found we really needed to do something about getting together the operational and the R&D medical aspects. We were in a position where operationally we had to get this information fly the experiments, and be responsible for acquiring the information. There were also medical people at MSC who were primarily serving as a research group and thus giving inputs to design and development, but were not connected with the operations group.

Thus we ended up having to live with the inputs these people made without having any control over their input. This was not a good situation. We had considered this problem at length with Max Faget and Dick Johnston on several occasions and a good deal of discussion centered around the medical people in Crew Systems Division. They were involved with the production of hardware which was of great medical importance (it could be called biotechnology)--hardware to support man in space, such things as suits, sensors, medical kits, waste management systems, environmental control systems, and all the things with which we were intimately concerned from the medical point of view and providing physiological requirements for these systems. I proposed that we should put together in one organization all activities related to medical programs. At that time Jim Elms was reviewing the organizational structure of the Center and he looked carefully at the medical functions. An old organizational chart showed a position and called a chief medical advisor to the Center Director. Dr. Gilruth and Jim Elms both felt there needed to be someone at that position and that there needed to be some way we could have a single voice at the Center for medical activities. Someone who could speak with Dr. Gilruth's backing. There was a period of time in the organizational structure where I was set up as the Chief of Center Medical Programs and that position was to be one in which I had Dr. Gilruth's authority to act for him in any medical matters. I was supposed to be able to pull together the various medical elements at the Center. Dr. Coons was made head of the old Medical Operations Office which was at that time still a staff office. I was on Dr. Gilruth's staff and the staff office for Medical Operations was lined to me but it was an anomaly in the organization. Then there was

the group in CSD which was under E&D. I was supposed to try to pull all these activities together for the Center. More discussions were held over time and it became obvious that we had to attempt to get these areas under one head. Discussions were held with Dr. Gilruth, George Low, Max and myself. I told them that we had to do something if we were going to have any meaningful medical effort at the Center, and that it was imperative that we create a line organization. After careful study, a decision was made. They didn't want to split out what they felt were a large group of engineers under E&D. It was agreed that CSD would be split up and they would pull out all the medical elements and those that could be defined as hardware would be left there. A new Directorate of Medical Research and Operations would be formed which would absorb parts of what had been CSD. We had maintained a close relationship with E&D Directorate and CSD giving them the physiological inputs and evaluating the hardware produced for its physiological adequacy, and as to whether it met these requirements or not. We are still living under that system and although it has some drawbacks, we've made it work. We have a good working relationship with E&D and I think it can continue to be made to work.

The experiments that were conducted on the three long duration Gemini flights were such that they provided us with the first solid information on which to base our decisions. It allowed us to say we were satisfied to make a lunar mission because we had had an eight and 14 day flight behind us. In the latter part of the Gemini Program we kept the experiments that were done down to those things related to extravehicular activity in determining metabolic rates. In our pre- and post-flight examinations we were interested in the metabolic rates for comparative purposes.

361 The Apollo Program will enable us to conduct a series of experiments  
362 that will expand on and confirm the Gemini data in a spacecraft where for  
the first time man was able to move about. Suddenly we found ourselves  
in a position where we were not going to do any of these though as speci-  
fic inflight experiments because of the revamping of the program follow-  
ing the fire. The necessity to curtail experimental activities and do  
those things which were necessary operationally were a fallout of the  
fire. We have designed a fairly detailed medical program which involved  
pre- and post-flight determinations which will enable us to confirm a good  
deal of the Gemini data and we feel that this data will be very valuable  
if handled properly. In addition, in Apollo we will have to face the pro-  
blem of back contamination--the possibility of bringing organisms back  
from the moon. // Therefore the lunar receiving lab has been established  
here at the Center and we have a unique organizational interface in this  
area, in that it is a very large biological facility as well as having  
geological and other physical sciences operations. We are responsible  
for the biomedical portions of that lab and we operate one whole branch  
of my organization there at the present time. Dr. Kemmerer is the person  
372 I hold directly responsible for that operation as I in turn am responsible  
to Dr. Gilruth as far as back contamination matters in the Center are con-  
cerned. We have to supervise the quarantine of the crew and the program  
of sampling and all the procedures necessary to provide the clearance of  
that quarantine. It has become a very involved activity and has required  
a large group of people to be assembled--both contractors and detailees  
373 from other services like the Dept of Agriculture, Interior, etc., to help  
us because we have to worry about plant pathology, the effect of any pos-



sible micro-organisms on things like oysters, trout, salamanders, and germ free rats and mice, etc. We have a very interesting bioscience capability being developed here because of that, and this is causing some reassessment of our organizational structure at the present time to meet that kind of a requirement.

378 // The other area which has caused some reassessment at the present time is the two AAP flights which are funded. Both are long duration flights--the first being 28 days and the second 56 days. These are primarily medical flights to determine how far we can extend man's stay in space and getting enough data to make determinations. Here for the first time life will be contained in what could be called a lab, and therefore the experiments are much more sophisticated. They require a lot more development time and effort and it requires a larger and more diversified staff to conduct this type of operation. We need engineers to help follow the hardware and we are diversifying our staff to provide for an experiments office that can follow the development of hardware, to see that things are done in a timely fashion, and interface properly with our medical primary investigators. This is going to cause a great deal of stress for our staff because we have only a small number of people and who have marked increases in responsibility when we are right at the point where all of our demands for Apollo support are beginning to reach their highest peak. Witness the current testing effort we are trying to support at the present time. Not only are we involved in monitoring centrifuge runs for the crews and monitoring altitude chamber preflight tests of the spacecraft crews, we also have chamber facilities of three different sorts here on the site, plus one at the Cape that we have to worry about, man, and monitor. We

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have an underwater facility here that we have to monitor and provide a treatment chamber for--hyperbaric chamber. We have a centrifuge on site and when you add up our responsibilities on all these facilities plus the flight test program in such areas as flying bedstead, a lunar landing training vehicle, it takes a large number of people to provide adequate medical coverage to keep them safe and still do planning.

The selection of the original seven astronauts was done secretly because the program at that time was not of public nature and STG officials were trying to get the selection completed before anything was made public about the fact that we were going to embark upon such a national program. I was at that time Chief of Flight Medicine at the School of Aerospace Medicine in San Antonio and had been involved in a number of activities directly bearing on this type of work, and therefore was asked to participate in that original selection. I was told to report to Wright-Patterson in civilian clothes and I wasn't even sure why I was going there until I arrived. Selection had been handled by a group of consultants headed by General Don Flickinger, an Air Force officer who had been in the field of Aerospace Medicine for some time and had served as one of the early consultants to STB. He had been involved in The Man in Space Program, which was going to put a man in a Redstone nosecone and do a suborbital flight (which eventually became Project Mercury). I had been involved in the early planning for that program with him and that's how I came to become involved in addition to my spot at the school. General Flickinger had responsibility for conducting some special examinations of test pilots for the CIA in a program that was set up at the Lovelace Clinic at Albuquerque. I suspect that the reason for selecting the Lovelace Clinic to

do these exams was that the examinations could be kept fairly quiet.

The original physical examination, the clinical evaluations, were done there. The applicants then went from the Lovelace Clinic to Wright-Patterson and we had them in groups a week at a time to do a series of stress tests. The results of the Lovelace examinations were given to us and we went over those initially as each group came in and they went through a prolonged series of stress testing and then all this material was put together. We met as a board and rated the applicants based upon the stress testing evaluations and in context with the clinical evaluations, and made some medical recommendations as to who should be selected. Since that time we've conducted a number of selections. The first one I was totally responsible for from a medical point of view was the next group that followed the initial seven. We decided to conduct the clinical portion of these examinations at the School of Aerospace Medicine and we decided we didn't need all the stress tests done before. Some were integrated into the clinical exams and we actually did some altitude chamber runs for familiarization purposes and the scientist group had a special selection technique. We had weekly conferences and some of my people there all the time. I went up for a weekly conference while people were being examined and we went over each individual in detail. Each man was kept at the school for a week. The group was then brought to Houston and met for the first time with the members of the board. Deke headed that board which included other astronauts, some other of the senior staff and I've been the medical member. Medical interviews were conducted with each of these people at the same time that the engineering group and astronaut group was interviewing the individuals. The findings are then all

brought together before the final selection board. Usually we rate the people medically and then these medical recommendations are compared. We hope we haven't disqualified the guys that the other groups have at the top of their list. One of the things that has been extremely valuable to us in the selection process has been the background investigations which are conducted. They enable us to compare the psychiatric and psychological test results. These two have been a powerful tool in the selection. In the early selections it was hard to get across the point that psychiatric or psychological information should be considered and there was a marked resistance on the part of the board, which was heavily astronaut-oriented. However, in the selection of the last group of scientists we eliminated a number of the 69 applicants on the basis of psychiatric and psychological test results. It was our evaluation that these people would be potential problems in crew relationships on very long duration flights, and that's what they were being selected for. I think this was a real milestone in our selection process, especially for long duration space flights.

There has traditionally been a close association between astronauts and their physician. We have been practically personal physicians to the individuals involved. But this poses some problems, because the physician finds himself in a dual role in that he has to look at what's best for the man as a patient--and the role he desires to do, his safety, his livelihood, his ability to do whatever is best for the man as an astronaut. As his personal physician you are trying to see that he gets the opportunity to do what he is trained to do. But there is a responsibility to the Agency, and to the program and there is where the conflict arises. It is neces-

sary to consider the safety of the overall program. What the man may want to do and what may be best for him in his eyes, is not necessarily what is best for the program, and if a person has a medical condition which the physician feels impairs his ability to fly, the conflict is immediate, as in the view of the astronaut this is bad because it means that he is not going to be able to do the task which he feels he has given his life. The physician immediately comes in conflict with himself in the two roles he is playing. This is a traditional problem with Flight Surgeons. The situation may arise where he may be living next door to one of his pilot patients and the flight surgeon finds himself being called to help the pilot when he collapses in his yard while pushing a lawnmower. The pilot loses consciousness and the flight surgeon takes care of him. Here the flight surgeon is torn three ways--his friendship with the pilot, his medical responsibility to him, and his responsibility to the service. While he helps this individual medically, at the same time the flight surgeon recognizes that the pilot is in a very serious position as far as livelihood is concerned, because having lost consciousness, he is in a very poor position for qualifying for a flight. This sort of thing happens to us all the time, more often to flight surgeons and physicians in aerospace medicine than to the average physician. Naturally there are some built-in antagonism, because a flight surgeon is always viewed as having the power by the stroke of a pen or a word, to remove a man's capability to do the thing which he has given his life to doing--flying. He can do that temporarily, which can hurt the man in his pocketbook because it takes away his flight pay or he can do it on a permanent basis. It is same as if someone would come in my office and pull my diploma off the

wall and say you are no longer a physician. I'm telling him he is no longer a pilot. That's a hard thing for an individual to accept. It's not an enviable position to be in. I think there was a good deal of that feeling initially in the space flight program. One of the first things I did here was to change that whole attitude and to work very hard to impress upon the astronauts that our whole purpose was to keep them flying and not to keep anybody from flying. I believe that with a passion, and that's why we are so concerned with preventive medicine, safety, etc. Each time an astronaut can't be allowed to fly I regard as a failure on our part. Sometimes we have no control over the situation. Individuals can develop conditions which the best preventive medicine care in the world isn't going to prevent, and we are then faced with some of these difficult decisions.

782 In Deke's case I became involved in a peculiar way, in that I was still in the Air Force. At the time Deke was due to fly. His condition was made public and was literally tried in the press. Unfortunately I think a very bad decision was made at that time by NASA. I was then spending about 50% of my time with NASA but I was neither a fulltime NASA employee or a fulltime detailee from the Air Force--I was for flights only. General Rhoadman at NASA Headquarters at that time wouldn't look that problem in the eye and wanted to bounce it back to the Air Force. He wanted the Air Force to make the determination about whether he was going to be able to fly or not. I considered that an abdication of responsibility as far as this matter was concerned. But it was done in that case. It ended up back in the Air Force's lap. More consultants examined him in the Air Force. I became involved when he was seen by the

Air Force consultants. I was also on orders at the time to come on a fulltime assignment to NASA. Therefore I ended up actually having Deke come and spend time in my home and took him personally to Paul Dudley White for consultation. I have been with Deke personally on a number of consultations since and we have had some programs worked out to try and pin his condition down and I think we have done this very well. He has a condition which would not allow him to fly alone, and it's one which he may have had for a long time, possibly even before he was selected. It certainly didn't appear in the selection exam. It is atrial fibrillation, which is chronic. His heart gets impulses to start the pulse from different parts of the upper chambers of the heart instead of from the pacemaker and this causes the difficulty. We followed it for a long time, but it posed a problem once we had to make the decision whether to follow the Air Force decision to ground him. //

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279-1  
I have a peculiar role here at MSC. The military services, thru the Surgeon General's Office have given me the authority to act in their behalf--to be their Surgeon General. I have responsibility to speak with their authority while these individuals are assigned to NASA. We have people from the Navy, Marines, and Air Force in addition to our civilians. In this capacity I am to make determinations as to what status the pilots will be allowed to fly. I can say that they can fly in a certain status here where if they went back to the service they might not be allowed to. We did that with Deke. I allow him to fly if he is with another pilot in the aircraft, but I would not allow him to fly in a spacecraft. The Air Force has no status such as that.

The next thing that happened to us was Al Shepherd when he developed

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an inner-ear problem which turned out to be chronic and we had to ground him just prior to the start of the Gemini program. Al is still grounded for this condition, which is a potential hazard since it involves losing orientation and balance without prior warning. It was a difficult decision to make. We had to notify the Navy and we kept it very quiet initially--just between the Surgeon General of the Navy and myself. It's been public knowledge since and we document what his status is annually to the Navy. Both of these cases reflect some of our problems. I'm in a very difficult position. Here we have two individuals who were in the original seven astronauts, who are now grounded, and yet both are in extremely influential positions, Al Shepherd heading the Astronaut Office and Deke being the Director of Flight Crew Operations. Both of these people are where they are because of medical reasons. This isn't a very good thing from my viewpoint. It puts me in a difficult situation--I think have very good relations with Deke and Al, but it certainly creates some anti-medical feeling under the surface if not overtly.

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There has always been the feeling on our part that we have the capability due to the monitoring we do, and the information we get about crewmen is necessary if we are ever going to say what man is able to do in space. There is a feeling that permeates the astronaut group--more so the early group than the ones selected later. It has been a problem all during the program, still exists to a great degree, and is aided and abetted by Deke and Al. Basically they are very interested in us maintaining the welfare of their people but at the same time they would like to keep us in the dark as much as possible. When they are in trouble they want us to help and protect them. But they don't want us to have any power



388-3  
 over them. So it's a strange relationship. We have to convince each crew involved as to what has to be done in order to obtain adequate medical information inflight. I find myself really walking a tight rope, where I am protecting the crew and trying to make the things we want to do medically fit operational programs and be sensible from an operational point of view. Because of this I am shot at by the scientific community who keeps telling me--you know you are not doing all the things that should be done and you are over-protecting the crew. On the other side, I am shot at by the crew because they feel I am trying to do science inflight at their expense. Thus it's a constant barrage from both sides. What I try to do is to walk the line and try in all the ways possible to keep both groups happy. It's a physical impossibility to keep both of them happy, but if we can be certain of our convictions and do our best to convince both that we are doing a responsible job, that's about the most we can hope for. So far we have been successful. But some days it gets to the point that I want to say to the astronaut group--"I am not going to fight the problem any more--I will turn you over to the scientists and let them have at you--I refuse to stand in the middle any more. If this is all the cooperation you are going to give us, we will let you take the ~~fullisade~~ <sup>Fusillade</sup>." We haven't really done that, but I've felt like it many times--particularly in the past year. //

377-6  
 I think we are coming along the road much, much better in this regard. I think things are coming to a head in the program as we look forward to 28-day and 56-day flights. There is realization on the part of the crews, and Deke and Al, that these things have to be. I suppose if you were to ask them, I think it would be their evaluation that they have had a good

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 deal of protection and intercession by the medical group. These decisions are very difficult in that we are literally deciding a man's career. I guess the Bull situation is the first one we've ever been involved in where we were in a position of having to decide whether we were going to turn the man back to his service or not. It is far from easy to do. Another hard thing in the relationship with the astronauts is the loss of people. We have had a number of deaths. We have established very close relationships, and I've personally had deep personal and close relationships with the families as well as the individual astronauts. This poses a problem and it's not without considerable strain and emotional trauma. But that's one of the rewards of the situation is the feeling that you have been able to do something that has been helpful and valuable to these people.

388.3  
 I think if I were able to characterize what the crew's feelings in general are about their participation in the decision as to flight readiness qualification, I would say there's really a basic dicrotmy in viewpoint. I guess if you'd ask Deke--he would say "Hell, <sup>the</sup> man's qualified-- why isn't he qualified?" The truth of the matter is that we have to prove that he is and I think we have gone a long way to doing so, but it can't be done just by astronaut opinion. We have to have data to prove that things are negative and if we can do that it helps greatly. I think that's one of the good things that came out of the Gemini Program--we got a lot of negative data which was extremely valuable to us, as well as the positive data we turned up that needed to be followed. The crews don't want to be used as "guinea pigs." That's the battle I fight all the time. We try to keep scientists from using them as guinea pigs and yet we are

continually trying to get good scientific data to determine whether these body systems are capable of space flight activity without using individuals as literal guinea pigs. I feel that any astronaut has coming into the program has the responsibility to be in essence something of a guinea pig, if that's required. I think he buys that when he comes into the program for we make it very clear to them at the outset that that is the case.

398-1 PSAC and members of the scientific community claim that we aren't completely operationally oriented and certainly not scientifically oriented. On the other side I get direct from the crews that we are scientifically oriented and not operationally oriented. They don't really believe that, for they know it's untrue. But that's the gist of the thing.

285-3 I was not involved in selecting Carpenter for his flight. We all had some concern about Scott's anxiety pre-flight. We had some concern about his problems in flight, and in the recovery. We felt there was a tremendous amount of anxiety involved and he did not perform up to the level of the other people. This was recognized by the astronaut group and he was not considered for future flight assignments. We had several things that documented this very high stress level that he had, as evidenced from his anxiety. We had a problem in recovery in that we did loose contact with him. We were not sure what had happened nor where he was. There was a good deal of concern on our part because we had serious concern about him just before the reentry itself and therefore we were mightily concerned when we lost contact. We had some high rates just before we lost him and so we were acutely concerned. We wanted to get hold of him in the fastest manner possible. At that point we got into a problem of service jurisdiction. When he finally was located it was by a SA16

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Air Force seaplane which would have landed and picked him up and gotten him out of the raft that he was in, but the Navy didn't want this Air Force aircraft to pick him up. There was a good deal of controversy about that and wrote in the post-flight report that we had to do something about defining what was an emergency. We considered being on a raft in the middle of the ocean an emergency situation and we wanted the individual picked up as rapidly as possible, particularly in view of the fact that we didn't know his condition and were concerned about it. We made that clear. I remember we even got a call from the Secretary of Defense during that particular time about that whole fiasco--I right at the console. He wanted me to confirm medically that we did feel that it was an emergency. I stated that we did and that he should be picked up, as soon as possible because we didn't know at that time what his condition was.

p. 5 - separation medical operations from air system.

p. 6 - medical program totally operationally oriented  
- medical developments under focus

p. 5 - PSAC experience - Webb's comment, health reaction (background)  
- p. 8

p. 7 - unrealistic division, but advantageous for operations

p. 8 - problems in separation, - occupational medicine

p. 11 - operation of the medical organization

p. 13 - 14 - organizational considerations

p. 15 - Directorate formed.

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p. 17 - change R.D. to A.D. Oct 3 '62