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Oral history interview with Harry P. Hutchins
[full name of interviewee]

about Brown + Root role as ^{USC} design firm
[main focus of interview]

and major ^{Service} Contractor

Title: Brown + Root Northrop
[interviewee's current and/or former title and affiliation]

Interview conducted by Robert B. Merrifield, Staff
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Historian at ~~(USC)~~ ? Brown + Root Northrop
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Career Path - 1952 BR-N

Topics - George Brown, Brown + Root and Houston Site

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INTERVIEW WITH HARRY P. HUTCHINS
October 23, 1968

I have been with BR-N since 1952. During that time I have served as an electrical engineering specialist, project engineer and project manager on principally projects of an industrial plant character. This work included both the normal power and controls of the electrical work, the instrumentation and the general mechanical work and the direction, the coordination and negotiation of criteria for plant design and construction, and the supervision of personnel and management of contracts necessary to achieve the start up and turnover to the client of an operational facility. My experience included some three years in foreign service in this capacity and in engineering and construction consultation work with clients.

In 1961 the engineering workload that BR-N had under contract was rather limited, and a number of us were performing functions designed to create in potential clients an appreciation of the talents and capabilities of the firm. During that period the selection of a site for the MSC was in process. We at B&R had become interested in the manned space program and as early as 1959 I participated in the development of a proposal to STG for the Mercury Range Tracking Network which was ultimately awarded to Western Electric. In developing this proposal we worked with IT&T, Chance-Vought and CEIR. We were unsuccessful in this proposal, but it familiarized me with the activities of MSC. So when the site selection was being pursued, we were quite interested. We liked the prospect of Houston being selected as it offered business opportunities, and the opportunity to display new areas of skills that we had developed in industrial plant design and construction. Mr. George Brown, Chairman of B&R

118 who was on familiar terms with a number of people in Washington talked with them; and Ed Redding of our Engineering Division discussed with the STG site selection committee the potentials and opportunities in Houston. We did everything we could as a firm to assist STG and to demonstrate the advantages Houston had to offer. This included Mr. Browns' personal involvement as Chairman of the Board of Governor's of Rice and as a close associate of the Chairman of the Board of Humble Oil in offering the land itself once the selection had been made.

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746 In the fall after the Corps of Engineers was selected as the agency to contract the design and construction work on the site we solicited the design work for our own firm. It was a tacit agreement that if B&R were to get the design work it would not bid on the construction because we have traditionally been an open shop operation so far as labor is concerned, and it seemed expedient from the Government's point of view to avoid any labor problems that might occur because of simultaneous involvement of both union and non-union contractors. During this period, Mr. Zbanek, Mr. Campagna and others visited our firm and saw what our resources were. The C of E in Fort Worth had been working with us on and off for several years principally in construction. Col. West, then District Engineer, held some discussions with us which resulted in our making arrangements with a number of local architects for assistance on the architectural design as opposed to the civil and engineering aspects of the work. Also an arrangement with a firm to assist with the master planning and the architectural concept development for the entire site. This resulted in subcontract arrangements with Charles Luckmann Associates from the West Coast, Brooks and Barr out of Austin, McKee and Kamrath and Wirtz, Calhoun, Tungate and Jackson of

Houston, and all architectural firms except Brooks and Barr and Charles Luckmann Associates who were the planners. Additionally, we made arrangements with Bernard Johnson Engineers for supplementation of our building mechanical forces--air conditioning and heating and ventilating work.

144 These arrangements were designed to add resource potential to our capability in terms of depth. Our weakness would have been in the architectural area. It was the area in which we did the least amount of work and therefore our depth was limited. The second thing would have been the depth of our air conditioning and ventilating design forces. The supplementation through these subcontractor arrangements was mutually advantageous to us and the Government.

146 Following the presentation at Fort Worth, about November 18, 1961, we were instructed by the Fort Worth District Engineer to proceed with the development of a Master Plan for the Center which should be presented to the STG at LRC on January 3. The Fort Worth District assigned an architect and engineer as resident monitors with us in Houston. Mr. Zbanek and other STG personnel came to Houston to survey the work we were doing in preparation for the presentation of the Master Plan and to consult with us regarding the desires and needs of STG.

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148 One real difficulty in this initial period and throughout the course of the next year was the limitation on availability of design criteria--the requirements which the MSC had developed for facilities. We commenced developing a Master Plan and an architectural concept and substantial credit must go to Charles Luckmann Associates. Mr. Luckmann participated in the presentation in January at LRC and did a fine job of selling the concept. The concept has been beneficial to the Government from the point of

view of economics of construction and flexibility of utilization. Until January 1962, the forces utilized in this area were principally in the professional categories--experienced personnel in architecture, and mechanical, electrical, civil engineering, especially in estimating costs. Even we didn't realize the tremendous importance to be placed on the latter until later when we discovered the tendency of the eye to overextend the pocket book. I was working on a planning approach to the implementation of the SESL needs which was originally a part of the 1962 budget. I had worked with Honeywell in Duarte, California and PDM, the chamber or tank people (Pittsburgh Des Moines Steel) and with the Consolidated Vacuum Corporation in development of concepts for the SESL, and had established a consulting relationship with significant academicians in the technology to try to allow us to offer to the STG a turnkey concept on the SESL including criteria, design development, and construction if desired.

165 The STG bought the Master Plan and architectural concept essentially as it was. They declined the additional offering I tendered in regard to the SESL. We began immediately to develop the plans for the site development--the tunnels, the utilities, contour and drainage, roads, etc., for the Center and by early spring we put out the first package for construction bids.

148 We were troubled by the Congressional budget line items had been developed without benefit of any significant criteria and without A&E and construction planning assistance in terms of cost. The budget was woefully inadequate to cover what had been asked for--the STG's budget had been designed to cover a large number of office and lab facilities, site development, SESL, and there was no way to stretch it. We continued to trim things

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that weren't fundamentally essential to the operation of the Center but which make a lot of difference in the satisfaction of the people convenience, etc. For example, parking lots. We started out hoping to be able to produce parking space for approximately 3500 employees and we trimmed that from a space for one per one and one-half employees and subsequently it was trimmed again. This is indicative of the type of difficulties we had. The greater the cost of the Center development grew and the larger proportion of the money had to be toward the technical requirements and less to the support requirements. During the spring and early summer we reached the peak of utilization of personnel under the design contract and this involved over 200 people. About 10-13% were architects, probably 20% were electrical engineering forces, and the remainder in the mechanical design forces and civil and structural engineering. The large impact of mechanical design was because of the intensive studies and cost tradeoffs and cost of operating considerations that went into the development of the central heating and cooling plant. While we were working on the plans for the air conditioning and ventilation of the buildings there was a heavy segment of work in mechanical engineering in spite of the fact that we were working on theoretically architectural facilities. The numbers peaked out about July when we put out the Building 12 for contract and some minor ancillary items.

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In the spring we had discussions with elements of the organization regarding costs and the requirements of MSC for technical capabilities in the facilities. The largest single difficulty we had was in knowing what was needed. Our contract was with the C of E. The Corps was to get the criteria from Zbanek's organization. Zbanek's organization was to accu-

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ulate it from the technical divisions, screen out that which was unnecessary, impractical, etc., from a budgetary point of view and give the Corps only the things that were imperative, real, and attainable. MSC hadn't been required to be concerned about facilities during the Mercury work. There was distress because users were remote from the designers, and the designers were frustrated because they couldn't talk with the people establishing requirements. There seemed to be an unwieldy amount of interface. However, there were some advantages in the arrangements, as had the designer been talking directly with the users the whole world wouldn't have been able to pay for the facilities.

During the fall, we approached the completion of our initial design contract with the Corps. This involved the master planning, site development, and the design of 20-25 buildings. In the process of all this work and the difficulties involved with proceeding with limited criteria availability, with the rework involved by the continual pumping in of improved and revised criteria, with the additions that were required to the design because of better understanding as we progressed--all resulted in a very high workload throughout the course of the design and involved a substantially greater cost impact from a design point of view than we had anticipated from the outset or that the Corps or NASA had anticipated. As a result a change order was negotiated between B&R and the Corps which upset a lot of people. B&R felt justified in its demands. The Corps was sympathetic because it understood the handicaps under which we were working. NASA-MSc was unhappy because it added an additional money problem in an area where there were already problems aplenty. There were strained relations over that item, but in the passage of time they have healed, I trust.

From B&R's point of view, we would have lost a considerable chunk of money had we not been allowed this claim. While we wanted to do the work, we didn't want to do it at a loss.

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About mid-summer 1962, I had been talking with Mr. Zbanek and others regarding some of the additional facilities to be required at the Center and particularly about the Thermochemical Test Area which had been requested in the FY-63 budget. As a consequence, Mr. Gillam of Procurement and Contracts worked out an arrangement whereby the Corps contracted with us for a first of concept study for the development of the Thermochemical Test Area design criteria, and this was followed by the detailed design of TTA facilities. This work was undertaken at the same time the last quarter of the work on the initial contract was underway. We had passed the peak but it was a heavy load because of the number of buildings involved. We worked on this criteria development study contract closely with Mr. Jesse Jones, Al Watkins, Weldon Heath (now deceased), and John Ogden, all of P&PD. Again, we were faced with the same difficulty--attempting to establish criteria for the detailed design and construction of facilities that were underestimated insofar as the budget requests were concerned. These things are relative, but it seemed that the budgets were always made on the basis of stripped down Fords by the time they got through Congress yet what was expected in design was a Cadillac. We worked closely with Mr. Jones' organization during the design study. We trimmed criteria to match available funds with estimated construction costs. I approached this particular contract on the basis of an attempt to reestablish with MSC the assurance that we were to try to help them and not to cost them additional money. The study was performed on a reimbursable cost basis

so there was no problem. This was a limited time and specified level of effort and we used engineers from the Marquardt Corporation, Van Nuys, California, to assist us with the development of the criteria for auxiliary propulsion systems testing and the other elements in the TTA. We used a maximum of around 35-38 personnel, principally, mechanical and electrical engineers. We did a lot of structural strength investigation from blast effects and things of that nature, but basically it was an electromechanical design problem, and the type we were best experienced in. The work on this design was completed in June 1963 and was put out for bid and the construction contracts awarded around the first of July. I have always been proud of the fact that the estimates we provided to the Government for the construction costs were always very close to the actual price tendered by the construction firms who bid on it.

736 After mid-1963 we didn't seek any further work from MSC. Our industrial contract work had increased so greatly from mid-1962 to mid-1963, that as a practical matter we didn't feel we could offer the resources that were necessary for a major design contract. Also, B&R had always been accustomed to profits on design that would approximate 15% or even more, and on the lump sum design contracts for MSC our profits generally ranged from 3-6%. While this isn't unreasonable, there is substantial difference in the attractiveness of the business.

736 In September 1963 MSC contacted us again. Mr. Zbanek called and asked if I would reassemble portions of our team to design Building 5, 11, and an addition to the central heating and cooling plant. The expansion of central heating and cooling plant was quite simple because we had established the design on a modular basis. We would only have to drop in addi-

tional units as the load grew and the building was structurally arranged to facilitate this. I envisioned the force requirements on this were not sufficiently demanding to cause us any problem and we worked out another contract with the Corps to do these facilities. We also did modification work on some other facilities that had been activated and now needed moderate modifications--the library, the credit union, etc.

On one occasion during this contract I was called to a meeting at the Rice Hotel where the District Engineer, Col. Keisch, was having a bid letting. It wasn't the bidding I was invited to, but rather a conference with him in his hotel room. The subject was a surprise to me which I haven't understood to this day the basis for it. Between the time Col. West left the Fort Worth District and this meeting with Col. Keisch, the auditors had gone through our contract books and presumed had audited the subcontractors as well. Col. Keisch said that we had made too much money on that first contract. It was such an astounding statement that I have lost recollection of why he broached the subject, but that stuck in my mind for I couldn't understand it. I challenged it. I knew what we had done and I felt either he didn't understand the circumstances or he considered some things profit that weren't profit as far as we were concerned. Our burden was in excess of 50% of the direct labor costs and I have never understood his implication. That was all there was to this allegation, but it was distressing to say the least.

During the Building 5 contract or one of the other late design efforts, Col. Blair, Resident Engineer for Fort Worth District, called me and asked if I would talk with one of the other divisions in the company and see if they wouldn't offer to convert a subcontract which they had been tendered

from A. O. Smith Corporation to our union affiliate. The Houston area division said they didn't feel like doing it because A. O. Smith had asked them to do this small job because the A. O. Smith people felt they could depend upon B&R to do the work that needed to be done. A. O. Smith had contracted for the supply of a 1-megawatt arc-jet in Building 262 and needed someone to install the electrical facilities associated with it--principally the power supply--and hook it up. This was only about a 40-man week job. It seemed that Col. Blair was concerned about the possibility of labor difficulties if our non-union electricians performed that work. We asked if they could give us a separate gate and he said the job didn't justify it. We asked is there any way, outside of giving the job away, that we could do it because A. O. Smith asked us to. We didn't mind if A. O. Smith asked someone else, but we didn't want to tell them we couldn't do it when we were able to, simply because our people were non-union. He said perhaps we could do it if we would agree to do it without additional cost to the Government, and to pay union scale to our personnel. That didn't bother us even though we hadn't priced the job that way. The job was accomplished essentially without incident, but there was some snarling and growling. I remembered Col. Blair's statement that the job didn't justify any special provisions as far as a separate gate. (A separate gate could be picketed without interruption to the work being done by the unionized labor forces.) He told me that if we were doing a very large job, however, they might consider such a thing. Later on after Bechtel had completed the design of the SESL and the first phase (the construction of the chambers) had been contracted to Chicago Bridge and Iron and the second and third phases came out for bid (the second for the building and the third the electrical and

mechanical), I remembered the remark of Col. Blair, and I discussed with MSC management an offering on the construction of the SESL, Phase three work. It had been designed by Bechtel and so there was no AE conflict. At that time we weren't doing any design work at all, and one offer seemed to be consistent with the original understandings we had had with MSC (generally we would not seek construction while we were doing design work). I coordinated the estimating of and assembled a bid on this package for the SESL but we were not successful. I think our bid was more reasonable than that of the winner, but the award went to the low bidder as he was qualified. Nevertheless, as a result of our involvement in the Thermo-chemical Test Area, and a familiarity with other MSC facilities both from a design point of view and from general association, we maintained our interest in the Center's activities. Thus, when it became apparent that MSC planned to contract the support operations, I was asked by the company to submit a proposal and did so. In April 1964, the Center had a pre-proposal meeting and discussed the advertisement for proposals of the operation and maintenance support services. I was assigned to see what I could learn. B&R had always been strong in the Gulf Coast area in maintenance services. The operations it had performed were largely of a temporary nature--in the period between completion of construction of a plant and the turnover to the client. From a territorial point of view we were interested in protecting what we considered our area from the invasion of other major competitive contractors who don't have an edge here, but who might if they won this contract. We decided that the chances were good that B&R couldn't win the competition by itself, and the odds would be better if we could join forces with an aerospace company. We discussed a potential

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joinder with a number of organizations and ultimately settled on Northrop Corporation as the proper choice. Northrop had been doing the same thing; they also needed some assistance in areas where they lacked strength and decided we were quite complementary to their capabilities. We decided on a joint proposal. It either had to be a Brown and Root prime with Northrop as a sub-contractor or it had to be a joint venture. Our preference was a joint venture because it more obviously combined the strengths of the two firms and eliminated the strains between prime and subs. (The conflicts of interest over who does what are not a factor in a joint venture where they are in a prime-sub relationship where either firm wants as much of the total responsibilities as possible in order to gain more of the fee.) Northrop was not too familiar with this type of arrangement, although it is quite common in the construction industry, but they found the idea reasonable; we proposed as a joint venture and were successful in winning the contract. It was designated NAS9-3806, a one year contract, renewable up to a maximum of a total of three years. We entered negotiations in September 1964.

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In negotiating the contract, the principal problem lay in attempting to define the services desired with sufficient specificity that we could supply what was needed and at the same time insure the Center understood that it was getting what it was asking and paying for. Many of the Center's operating branches were concerned about contracting this work, because they would have preferred to have done it with civil service personnel. They were particularly nervous about assigning responsibilities of a professional character. Initially the contract called primarily for technicians and mechanics with supervisors with engineering skills. This arrangement permitted a professional to non-professional ratio of about 1 to 12.

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During the development of the terms and conditions of the contract, and after establishing the statement of work to be performed, the labor relations policy came up for discussion. We approached this subject forthrightly and told MSC we planned to perform the contract on an openshop or non-bargaining arrangement. Mr. Chaney, the Labor Relations Officer, was uneasy over this prospect. He pointed out that the maintenance services that we were contracting for were in part being performed by Lockheed Aircraft Services Corporation under bargaining agreement with the International Association of Machinists. He feared that if we attempted to do that work particularly without a bargaining agreement we were apt to have labor difficulties that could shut down all of the Center's construction operations. (Throughout the course of the first three years of work we performed on this contract, it seemed the overriding consideration in our labor relations was a concern about what happened to other people more than what happened to our own. What we could or could not do seemed to be determined to a major degree by what attitude the building and construction trade unions might take toward other contractors. We only wish we were as free as people seem to assume.) He wasn't concerned about the International Association of Machinists who represented Lockheed Aircraft Services employees as much as he was concerned about the building construction trades on the constructions contracts. We jointly arrived at a conclusion that if we could obtain an agreement with the Metal Trades Union which included both building and construction trades unions and the International Association of Machinists we could avoid the objections of both. We wouldn't have arrived at this by ourselves. He had studied the issue, introduced us to the union representative, and led us to the conclusion. After discussion it, we decided our best interests

would be served, and we could still accommodate his desires, by segregating what we considered the technician or semi-professional from professional work. We could separate these elements by the use of another company which we had available, but not activated, the Darius Field Facilities. We had formed this little corporation in connection with a proposal we had made to an Arabian Gulf firm for some operations there, but had been unsuccessful, and the company was actually dormant. We discussed the plan with Mr. Chaney, and he asked me to talk with Mr. Willis Ray about this. Mr. Ray was fearful the plan would not be successful, as he felt we would shortly lose the operating forces to some other union who would have new and different problems. Their arguments weren't sufficiently convincing to us, and we went to the contracting officer and told him we would plan to proceed with the Darius Field Facilities as an organized bargaining unit, but with the remainder as BR-N forces as a non-bargaining unit. This didn't seem to satisfy the contracting officer because while we had the plan, we didn't have the bargaining agreement and they weren't sure we could reach one even with Darius Field Facilities. The MSC contracting officer suggested we try to reach an agreement with the metal trades organization before we entered upon performance of the contract in order to assure we didn't have any labor interruptions at the transition point. We spent the greater part of November negotiating with the Metal Trades Union for a bargaining agreement on behalf of Darius Field Facilities, only to have the Metal Trades Union collapse in late November because the International Association of Machinists withdrew from it. Since they represented the employees Lockheed had doing the work at the time, it left us hung out to dry; our whole concept was in suspense. We asked for the contracting offi-

cer's order to proceed upon the performance of the contract since we had no control over the unions and we couldn't force them to bargain with us nor keep them amalgamated, and we felt it necessary to make some move. Around December 1, we got an order to proceed and commenced to bring people onboard.

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To accomplish the work under the contract we had located and designated key supervisors out of the two parent corporations. We had them ready to start and the nucleus of an administrative organization ready--a safety man and personnel man. We had established an office at the site for the joint venture and were ready to identify personnel requirements and begin to recruit. We worked out an arrangement with Lockheed to hire what we thought the best of their personnel they planned to relieve upon the transition of the contract. We phased those people into Darius Field Facilities during the first three weeks of December. Additionally we brought onboard a limited number of operational personnel and put them into the labs, principally the CSD Lab. Mr. Harry Claggett, presently the deputy manager for BR-N who had come from Northrop, was assigned as manager over the CSD Lab support operation. He and the personnel man recruited an initial force for the CSD lab including some personnel identified out of minor contract organizations serving the Center at the time, and which CSD personnel felt had performed adequately.

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During our first year we recruited about 300 personnel and the recruitment curve was quite steep. We brought onboard about 100 of them within the first couple of months. The next 100 took about three to four months. The remainder were hired over the rest of the contract year. At the beginning of the second year, the requirements for support identified during

negotiation of the follow-on contract were substantially heavier because of the activation of the SESL and the preparation for activation of the flight acceleration facility. Both of these required personnel in greater numbers and level of skills than during the first year of the contract. We had to seek additional professionals and a larger number of technicians.

One of the greatest difficulties we faced over the entire period was not with numbers but with specific skills. When we embarked upon Contract 9-3806, the labor market was relatively good. A number of missile site organizations, etc., had completed their work in installation activation and updating, and quite a few people were available with the basic skills required for the operation and maintenance of the facilities we were supporting, except in certain areas such as acoustics work. We had a substantial degree of difficulty with our vibration and acoustics lab staffing during the first year and the largest number of disappointments there in terms of personnel we assigned. This was due primarily to the fact that there are not a lot of people in that business. During the second year we grew to about 400-450 people and by the third year we had well over 600 people.

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One of the things of greatest concern to me and yet an area in which we accomplished a lot in terms of assistance to the Center was the maintenance operation. This function was performed by the Darius Field Facility group. It did fine work, and the Center's monitors never really complained about the mechanical accomplishment of the work. But we had a difficult time maintaining a stable management in that area of our operation and this caused us difficulty. I had difficulty supplying precisely what the Center wanted in terms of management and the Center's personnel had ~~diff-~~

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~~difficulty supplying precisely what the Center wanted in terms of management~~
~~and the Center's personnel had difficulty in managing the contract.~~ Some
of the Center people had a tendency to get into the role I should have
played and directed our personnel a little too closely. Whenever I was
unable to supply strong enough personalities to avoid that result, it
caused us difficulty. I was forced to replace the manager of that segment
of the operation twice. The third man finished out the third contract year
and was satisfactory and the type I should have had from the first. The
Center's evaluation of our performance was erratic as a result of this
difficulty, varying from reasonably high to quite low. I am confident
that the performance didn't vary that much.

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During these three years a substantial number of things happened that
caused us concern. We started out with a cloud over our heads as far as
the Darius Field Facilities was concerned, having tried to work out a bar-
gaining agreement with the Metal Trades Union only to have that collapse.
We then agreed to an arrangement whereby the Metal Trades Union and the
International Association of Machinists could solicit the sanction of those
employees in a National Labor Relations Board-supervised election of a
bargaining representative. Employees chose the Machinists Union in Febru-
ary 1965 for their representative and we negotiated contracts with them.
The negotiations were completed about November 1, 1965, for a one year term
and renewed for a three year term in 1966. Our relations in the Darius
Field Facilities area was stable throughout that term except for little
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problems at the tag end of negotiations trying to get things settled and
get the agreements closed. I was somewhat distressed each time we were
in negotiations with the Machinists Union by the degree that Center Manage-

*MSC Management
overly ambitious??*

ment felt it necessary to be involved in the operation. I'm sure they were likewise distressed. Mr. Hjernevik felt they were involved because we hadn't gotten the thing settled as quickly and quietly as he hoped. We felt they were a third party at the table whether they were there physically or not. Negotiations were settled each time without any interruptions and in each case we felt the settlements were reasonable.

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Around the fall of 1965, the International Association of Machinists sought representation for our employees in the laboratory operations (the BR-N area). In that election the International Brotherhood of Electrical Workers also intervened and was granted a place on the ballot by NRLB. In the election both unions were defeated rather substantially. This was an attempt on the part of the machinists union to expand their influence into the laboratory support operations, and to use the Darius Field contract as a springboard to get BR-N personnel under contract. In the following year we had an election in which the United Automobile Workers and the Machinists Union were involved. The Machinists Union dropped out before the balloting but they were in the preliminaries. The UAW attempted to sell our employees on the theory that MSC was an installation which justified a rate inflated by some so-called remote site or missile area bonus which historically has amounted to about 55¢ per hour in the rates. The waging of this campaign involved a lot of coordination with the Center in order to advertise what the real policies of the Government were. In that election, the UAW got about the same number of votes as the vote for no union. However, the union challenged about 100 voters who were subsequently ruled to be eligible. In the hearings subsequent to that election, the union conceded it had lost the election. Since then, the UAW has sought

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again to get an election of our BR-N employees but has attempted to limit the eligibility to vote to employees of only certain classifications. The National Labor Relations Board held a hearing to try to determine what the proper definition of a voting unit would be. This hearing lasted from the last of April until about the last of September and is currently before the Board in Washington for definition of a unit and decision. I anticipate we will have another election about the first of the year with the UAW as the contending union. I don't know what they'll be selling this time.

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We have had a number of problems with our employees over the years because of the peculiar relationships that have occurred in the Center's contracting. The employees of NR are represented by the Auto Workers Union and their rates and benefits are equivalent to the national rates and benefits. The hourly wage rates have been inflated by this 55¢ per hour, which has caused us trouble. In addition, when we came here we brought our hospitalization and medical insurance program from B&R and although it had been used for years by B&R, it is not equivalent to that provided by aerospace companies. This fact caused us a great amount of grief and eventually we were forced to change. After several revisions we redesigned the program entirely.

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We also have had some minor difficulties with our people over jurisdictional matters insofar as who ought to be performing what work, particularly insofar as concerns one company versus another. The work of the various companies appears to be so much alike in terms of the skills required, the physical equipment, etc., that one blends into another and it's easy for minor disputes to occur. We have tried to take the position we want to do what Center Management feels right and proper for us to do.

Sometimes, we do things that they think we should do, and which we are willing to do but which perhaps someone else things we shouldn't do. Little disputes arise after the work is done that cause us minor problems.

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At the end of the third year of Contract 3806 which was the final year of the contract, it was restructured. The RFP that was issued in 1967 for the award of services was structured as that the maintenance services which we had previously performed with Darius Field Facilities were combined with the maintenance services that had been performed by Graham Engineering in the past and the other functions Graham had done and also some engineering functions that Lockheed had performed. That contract was won by LTV Aerospace. Consequently at the end of November 1967, we deactivated Darius Field Facilities and provided for either the employment of those employees by BR-N or by LTV wherever LTV wanted them or we did and the employees were willing. At the present we are involved only with the lab support operations and not with maintenance.

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About mid year 1966, Mr. Zbanek called me and indicated that the Center was going to need a surveillance A&E service--what the Corps calls a Title II Engineering Service--for the engineering surveillance of construction of the Lunar Receiving Lab. That service had been provided by the C of E in past years, but the Corps was not involved in the IRL design. MSC didn't have sufficient work force to perform the Title II service of inspection and construction acceptance--surveillance of spec compliance, etc. He asked us if we could perform this service for them. I passed on his inquiry to B&R. Brown & Root felt their interest under the circumstances would be better served if the function was performed by the joint venture rather than Brown & Root solely and the Board of Brown & Root agreed

to provide a joint venture with the resources necessary to do it if the Center wanted to award the contract to us. In July 1966, we embarked upon the Title II effort for MSC on the IRL. This effort was over about 12-13 months.

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In the meantime, in January or February 1967, the S&AD and the Medical Research and Operations Directorate had recommended and the Center Management had agreed to append the support operations for that lab to the BR-N operational support contract. It was gratifying to us because we felt it was an expression of confidence and appreciation for the service we had performed in the past. In the activation of the support operations in that lab we encountered one of the most serious problems we have had. It was like the problem we had in the maintenance operations in that it involved the manager. I was able to identify at the outset a man whom I felt could do a great job and whom I am still confident could have but I wasn't able to sell him on the idea of taking it. I had to cast around for someone else and, eventually recruited a man who has limited experience in management as opposed to his scientific background. Subsequently we have taken a lot of criticism on our weakness in management in that area. I don't deny that it's deserved; people unfortunately aren't born as managers-- they are made. If you can't find one already made, you have to make one and sometimes that is a grueling task.

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Our relations with our NASA counterparts in general have been fine although there have been rough spots. They have been rough principally because (1) our people don't always know nor understand what MSC wants to do nor what difficulties it is encountering, and (2) the MSC personnel don't always appreciate the problem of attempting to work with a contractor

through the contractor's supervision in such a way as to get the most out of the force as a whole. They often attempt to go from what they want to what they think the contractor ought to do without letting him develop the plan himself. When that happens the water gets a little rough.

With other support contractors, I think our relationship has been very good other than when problems resulted from jurisdictional disputes or out of union agitational efforts. We have limited contact with the prime contractors except on testing of the vehicles, and there principally the interface work is handled by the NASA organizations and consequently what limited contacts we have had have been very good.

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One of the problems we have had, and one which also causes the Center problems, and Center Management realizes it, is the tendency of divisional or directorate organizations to be quite parochial. Our lab support organizations tend to become a wing of a Center divisional organization than they do a wing of our company. It's difficult for us when we want them to do something that doesn't fit into the plans of the local NASA managers. One of our selling points of the original contract was the concept of cross utilization and cross training of our personnel to smooth the peaks and valleys of personnel requirements and insure maximum utilization. It's been very difficult to realize this practice because each lab manager develops a possessive attitude toward the people who are a resource in support of his lab. He hesitates to reveal that at any particular moment, he isn't fully occupying all these resources and consequently will not allow them to be moved elsewhere to solve a peaking problem for fear that when he does need them, they won't be available nor allowed to come back. This isn't unique to the Center--it's typical of people. Anytime a man

has a job to do, he's going to try to protect the resources he has available to insure he can get the job done.

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We have been gratified by the development of a generally good understanding between our local managers and the managers for the Center over the four years we have been here. We feel this understanding has contributed substantially to our ability to perform and it has helped us over the rough spots. The empathy that exists has prevented serious fractures. We have been frustrated at times, however, by the lack of adequate recognition of the contribution of our people. They are recognized if a major test comes off well. But when the sunshine focus is rare and in the day-to-day routine work the good things don't seem to get near as much attention as the things that drop through the cracks. Consequently we think that in proportion to the effort that goes into our performance and the attention it receives perhaps the appreciation is more oscillatory than it should be.

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In all the time I've worked with the Center, my personal relations with the E&D Directorate personnel, Dr. Faget, Mr. Aleck Bond, Norm Smith, Jimmy Baker, and with the Procurement and Contracts personnel, Charlie Stotz, especially, have been very, very good. They've been very helpful and understanding whenever I've had a problem and have performed the contract management and evaluation as well as human beings can. We don't have any serious problems there. We feel we could do more if allowed more responsibility or if the Center assigned us more responsibility. We get a little frustrated at times by what seems to be the detailed constraints on the application of resources to our effort. I hope that some day we can have a task defined for us and an estimate of the total resources in

terms of dollars and time be made, and then we be turned loose to do the job subject to those bounds. I recognize perhaps that's a lot of latitude to allow a contractor, but we've tried to develop that degree of confidence where it would be justified.