

CHAPTER IV

HISTORY OF CONSTRUCTION CONTRACTS

Contract Histories. Invitation for bids No. ENG-45-164-60-1 for construction of WS-107 A-2 Technical Facilities at Mountain Home Air Force Base, Idaho, was issued on 6 January 1960. Addendum No. 1 was issued on 8 January 1960 to revise the bid opening location from Walla Walla, Washington, to the House of Representative Chambers in the Idaho State Capitol Building at Boise, Idaho.

Tours of the Sites were conducted 15 and 16 January 1960, and a pre-bid conference was held 18 January 1960 in Building 710 at the City-County Airport in Walla Walla, Washington.

Addendums Nos. 2 thru 8 were issued 25, 20, 26, 27, 28, 29, and 28 January 1960, respectively. These addendums contained numerous revisions to the special conditions and technical provisions of the original invitation specifications.

Bid opening was held 5 February 1960 by Colonel Paul H. Symbol, Walla Walla Corps of Engineers District, in the presence of Governor Smylie of Idaho and numerous other public dignitaries in the Idaho State Capitol at Boise, Idaho. Six bids were submitted ranging from \$28,899,053.00 to \$30,809,349.00. The Government estimate was \$32,887,169.18. Low bid was submitted by a joint venture, Kaiser-Raymond-Macco-Puget Sound, the successful bidder. (For tabulation of bids see Appendix No. 19.)

The joint venture consisted of the sponsor, Henry J. Kaiser Company (a Nevada Corporation), 1924 Broadway, Oakland, California;

Raymond International, Incorporated (a New Jersey Corporation), 140 Cedar Street, New York, New York; Macco Corporation (a Nevada Corporation), 14409 S. Paramount Blvd., Paramount, California; and Puget Sound Bridge and Dry Dock Company (a Nevada Corporation, 2929 16th Avenue, S. W., Seattle, Washington.

Expeditious action was initiated to award the contract on 8 February 1960, with the Notice to Proceed being hand delivered 9 February 1960 for Contract No. DA-45-164-ENG-3565.

The Corps of Engineers' Area Office was established in buildings 109 and 110 on the Mountain Home Air Force Base in January 1960. The buildings were converted from hospital buildings to offices and rehabilitated under Contract No. DA-45-164-ENG-3558 by K. H. Matthews of Boise, Idaho. This contract was awarded 23 December 1959, for \$43,450.00 with the Notice to Proceed being issued 26 December 1959. Work was begun 28 December 1959, and the contract was completed within the contract time on 22 January 1960. The final amount of the contract was \$43,573.50 as revised by one modification.

Water Well Contracts Nos. DA-45-164-ENG-3376, 3394, and 3506 were awarded and administered by Corps of Engineers District, Walla Walla, prior to establishment of the Area Office.

Other support facility contracts which it was necessary to award and complete prior to construction of WS-107 A-2 Technical Facilities are tabulated on the following page.

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<u>Contr.</u> <u>No. DA-</u> <u>45-164</u> <u>ENG</u>	<u>Descrip.</u>	<u>Contractor</u>	<u>Bid Amount</u>	<u>Award</u> <u>Date</u>	<u>NTP</u> <u>Date</u>	<u>Completion</u> <u>Date</u>	<u>Final</u> <u>Amount</u>	<u>No.</u> <u>of</u> <u>Mods</u>
3553	Water Wells Complex C	Russell Lowe Boise, Idaho	\$ 50,825.00	30Nov59	11Dec59	10Mar60	\$ 48,581.76	2
3554	Water Wells Complex A	Core Drilling Co. Denver, Colo.	\$216,825.00	30Nov59	14Dec59	12May60	169,667.70	1
3555	Access Road Complex B	Robert V. Burgraf Co. Idaho Falls, Ida.	80,812.00	10Dec59	19Dec59	19May60	77,768.30	1
3556	Access Road Complex C	Asphalt Paving & Construction Co. Boise, Idaho	24,362.50	10Dec59	28Dec59	30May60	26,216.56	3
3561	Access Road Complex A	Russell M. Espedal Portland, Ore.	117,348.68	6Jan60	12Jan60	25May60	124,136.28	0

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Construction on WS-107 A-2 Technical Facilities was officially begun 7 March 1960, by a ground-breaking ceremony at Complex C by Governor Smylie of Idaho.

Supply contracts were awarded by the Government under Invitation No. ENG-25-066-60-35 to the following Contractors for standardized equipment: (See following page.)

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<u>Contract No.</u>	<u>Contractor</u>	<u>Description</u>	<u>Amount Original Contract</u>	<u>Award Date</u>
DA-25-066 ENG-5985	CompuDyne Corporation Hatboro, Penn.	Propellant Loading System Valves & Related Equipment	\$ 677,217.00	24Dec59
DA-25-066- ENG-5928	Lox Equipment Company Sacramento, California	Propellant Loading System Cryogenic Vessels	811,800.00	9Dec59
DA-25-066- ENG-5978	Keenan Pipe & Supply Co. Denver, Colorado	Propellant Loading System Pressure Vessels	993,038.00	23Dec59
DA-25-066- ENG-5968	Nordberg Manufacturing Co. Milwaukee, Wisconsin	Electrical Generating Equipment	1,162,566.00	18Dec59
DA-25-066- ENG-5962	Federal Pacific Elec.Co. Scranton, Penn.	2.4 KV Switchgear	277,965.00	11Dec59
DA-25-066- ENG-5934	Trane Company LaCrosse, Wisconsin	Air Conditioning & Refrig- eration Equipment	146,598.00	9Dec59
DA-25-066- ENG-5940	Joy Manufacturing Co. Chicago, Illinois	Air Compressors	92,861.00	9Dec59
DA-25-066- ENG-5946	CompuDyne Corporation Hatboro, Penn.	Alarm System Equipment	88,170.00	9Dec59
DA-25-066- ENG-5952	G. M. Wallace & Co. Denver, Colorado	Pumps	87,450.00	9Dec59

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The preceding contracts were awarded by U. S. Army Corps of Engineers District, Omaha, by the Omaha District Engineer. Transfer of the Contracting Officer to a Successor Contracting Officer, the District Engineer, U. S. Army Engineer District, Walla Walla, was accomplished as follows:

<u>CONTRACT</u>	<u>DATE</u>
DA-25-066-ENG-5985	7 Mar 1960
DA-25-066-ENG-5928	24 Mar 1960
DA-25-066-ENG-5978	6 Feb 1960
DA-25-066-ENG-5968	7 Mar 1960
DA-25-066-ENG-5962	6 Feb 1960
DA-25-066-ENG-5934	29 Jan 1960
DA-25-066-ENG-5940	29 Jan 1960
DA-25-066-ENG-5946	29 Jan 1960
DA-25-066-ENG-5952	29 Jan 1960

In accordance with Paragraph SC-8A of the prime construction contract No. DA-45-164-ENG-3565, administration of the above contracts was assigned to the prime construction contractor on a reimbursable basis. Installation of the equipment furnished under the assigned standardized equipment contracts was accomplished by the prime construction contractor. The assignment of the administration of these supply contracts to the prime contractor was made as follows:

<u>CONTRACT</u>	<u>DATE</u>
DA-25-066-ENG-5985	16 Mar 1960
DA-25-066-ENG-5928	30 Mar 1960

<u>CONTRACT</u>	<u>DATE</u>
DA-25-066-ENG-5978	16 Mar 1960
DA-25-066-ENG-5968	16 Mar 1960
DA-25-066-ENG-5962	16 Mar 1960
DA-25-066-ENG-5934	16 Mar 1960
DA-25-066-ENG-5940	16 Mar 1960
DA-25-066-ENG-5946	16 Mar 1960
DA-25-066-ENG-5952	16 Mar 1960

Modifications to the assigned standardized equipment contracts were processed through the prime construction contractor for the following amounts:

<u>CONTRACT</u>	<u>AMOUNT</u>
DA-25-066-ENG-5985	\$415,143.00
DA-25-066-ENG-5928	24,726.00
DA-25-066-ENG-5978	2,230.00
DA-25-066-ENG-5968	2,790.00
DA-25-066-ENG-5962	291.00
DA-25-066-ENG-5934	1,447.00
DA-25-066-ENG-5940	-0-
DA-25-066-ENG-5946	7,969.00
DA-25-066-ENG-5952	26,163.00

Payment for the additional administrative costs to the prime construction contractor has been made in the amount of \$23,810.00 for a total cost of change order work for the assigned contracts of \$504,569.

Modification No. 164 to Contract No. DA-45-164-ENG-3565 provided

for a modification to Contract No. DA-25-066-ENG-5985 to reimburse the supply contractor in the amount of \$252,000.00 for additional work required to reclean and repackage the propellant loading system valves and related equipment to the point of delivery.

Effective 12 October 1960, the Contracting Officer's contractual authority covering control, supervision, and administration of all work under the contract including jurisdiction over all field operations was transferred from the District Engineer, U. S. Army Engineer District, Walla Walla, to the Titan I Directorate, Corps of Engineers, Ballistic Missile Construction Office, Los Angeles, California.

As of 30 May 1962, 246 modifications to the prime construction contract had been issued with a dollar value of approximately \$19,790,000.00 which increased the contract value to \$49,695,977.93 as of that date with an estimated final value of \$51,500,000.00.

Of the total number of modifications, two contained only revisions to the contract completion schedule. Modification No. 2 interchanged the contract completion dates for Complexes A and C. Modification No. 92 and Supplements Nos. 1, 2, 3, and 4 revised the contract completion schedule for various structures at all complexes. No change has been made in the final contract completion date of 1 April 1962, as specified in Paragraph SC-1a of the original contract specifications. For a listing of all modifications issued under the prime construction contract, see Appendix No. 20.

Twenty-nine of the total number of modifications to date have been issued in excess of \$100,000.00. Comments regarding these

modifications are as follows:

Modification No. 32 was issued on 9 February 1961, to provide for revisions to the PLS piping, LOX crib structure, and the tunnel pipe supports which was determined necessary as a result of a detailed study of the stress analysis of the A-E firm. The Contractor's original proposal of 2 June 1961, was for \$4,002,279.00. Negotiations were conducted in the Area Office on 16, 19, 21, 22, 24, and 27 June 1961, 20 July 1961, and 20 and 30 August 1961. Final settlement was reached in the amount of \$1,625,000.00 at CEBMCO during negotiations between the Contracting Officer and the Contractor on 8 September 1961. The Contractor reserved certain rights to claim for additional acceleration, impact and effect costs on this modification.

Modification No. 45 was issued on 11 February 1961, to provide for a final safety-relief valve bench test, to insure that the valves for the propellant loading system open at the specified pressures and reseal themselves for proper system operation. The Contractor's original proposal of 22 April 1961, was for \$137,275.00. Negotiation meetings were held in the Area Office on 19 and 23 May 1961, at which time it was agreed to a settled amount of \$115,000.00.

Modification No. 56 was issued on 11 February 1961, to provide for revising the standardized equipment water chillers. Subsequent revisions to the scope of work resulted in revisions to diesel generators and switchgear for compatibility with the water chillers. The Contractor's original proposal of 30 October 1961, was for \$315,000.00. Negotiations were conducted on 18 September 1961,

8 November 1961, 1 December 1961, 20 December 1961, 31 January 1962, 1 February 1962, and 2 February 1962. Final settled amount was \$135,000.

Modification No. 57 was issued on 9 February 1961, to provide for certain miscellaneous changes to correct design deficiencies and to conform with revised design criteria. The Contractor's original proposal of 7 February 1961, in the amount of \$401,675.00, was subsequently revised on 15 July 1961, to \$564,000.00 because of a revision in the scope of work involved. Negotiations were conducted on 4, 8, 9, 15, and 18 August 1961. Final agreement was reached on 21 September 1961, for the amount of \$400,000.00.

Modification No. 60 was issued on 11 February 1961, to provide for the prime construction contractor to install certain Government furnished door hardware in the Antenna Silos in lieu of an integrating contractor to facilitate completion of the contract. The Contractor's original proposal of 14 April 1961, was for \$251,230.00. During negotiations on 1 June 1961, the Contractor agreed to a \$150,000 settlement.

Modification No. 73 was issued 9 March 1961, to provide for the deletion of water well completion at Complex 1-A since the wells had been successfully completed under other contracts. The original provided for the option of the Government to delete this work at the rate contained in the Unit Price Schedule. This modification resulted in a credit to the Government in the amount of \$123,555.00.

Modification No. 82 was issued 24 March 1961, to provide for an equitable adjustment in the contract amount for settlement of the

Contractor's claim for additional compensation for using ring beams in the missile silos at Complex 1-A in lieu of the specified rock bolts. Because of unsafe conditions due to unsuitable material, the Contractor was directed to use ring beams and gunite at Complex 1-A in lieu of the rock bolts indicated on the contract drawings. The Contractor's original claimed amount due of \$166,611.00 was submitted on 8 July 1960, and revised on 4 October 1960, to \$153,102.00. A determination by the Contracting Officer of 10 March 1961, resulted in a decision that the Contractor's claim was valid and that the work involved was in excess of the contract requirements and that he should be reimbursed for the added work resulting from the changed conditions.

Modification No. 90 was issued 13 April 1961, to provide for additional blast lock reinforcement to provide additional personnel protection which was determined to be necessary as a result of an abort at another similar installation. The Contractor's original proposal of 19 June 1961, was for \$703,039.00. Due to a revision in the scope of work involved, the Contractor revised his proposal to \$770,434.00 on 7 July 1961. Negotiations were conducted on 29 July 1961, with a final agreement on 11 August 1961, in the amount of \$490,000.00.

Modification No. 96 was issued on 1 May 1961, to provide for revisions to Section TP-39 "INSTALLATION, PREPARATION, AND TESTING OF PROPELLANT LOADING SYSTEM." The Contractor's original proposal of 4 October 1961, in the amount of \$3,545,000.00 was revised upward to \$4,062,370.00 on 11 November 1961, as a result of a revised scope of work. Additional revisions to the scope of work resulted in another

revised proposal in the amount of \$6,339,285.37 on 8 January 1962.

Negotiations were conducted on 6, 13, 14, 20, and 28 December 1961, and 2, 4, 5, 9, 11 and 12 January 1962, at Area Office level. On 15 and 16 January 1962, the Contractor met with the Contracting Officer to attempt to negotiate an equitable adjustment for this modification. During the meeting of 15 January 1962, the Contractor revised his proposal to \$6,120,944.70. No agreement was made and the Contracting Officer notified the Contractor on 16 January 1962, that the modification would be issued unilaterally for the amount of \$1,380,000.00. The Contractor requested 30 days in which to prepare and present substantiating evidence and a counterproposal regarding his position. Further review by the Government revealed that the unilateral modification should be issued for the amount of \$1,791,000.00. The Contractor submitted a counterproposal on 13 February 1962, in the amount of \$3,600,642.95. A final determination by the Contracting Officer has not been made. The main differences between the Contractor's proposal and the Government's position are the Contractor contends a tremendous loss of labor efficiency because of maintaining a continuous purge and that additional time was required due to heliarc welding and that the revised testing of the PLS components required 73% additional time and labor. The Government's position is that the small amount of gas flow used to maintain the purge did not cause a loss of labor efficiency, and that the required heliarc welding actually reduced the Contractor's costs because of the reduced amount of handling and re-cleaning required. The Government further alleges that only 48% of the labor required to perform the revised testing is caused by this

L. Johnston, Inc., of Columbus, Ohio, was the low and successful bidder. Notice to Proceed was issued on 26 October 1960. Ten modifications to the contract have been issued and two claims are outstanding. The modified contract amount is \$404,198.49. Construction work was completed within the scheduled contract completion time of 12 May 1961. See Appendix No. 16 for the tabulation of bids, and Appendix No. 22 for a tabulation of modifications.

Invitation No. ENG-45-164-61-7, Contract No. DA-45-164-ENG-3625, Guided Missile Assembly and Technical Supply Facility was issued 19 September 1960, with bid opening on 25 October 1960. Nine bids were submitted ranging from \$436,016.00 to \$575,000.00. The Government estimate was for \$568,000.00. Babbitt Construction Company of Boise, Idaho, was the low and successful bidder. Notice to Proceed was issued on 3 November 1960. Fourteen modifications to the contract were issued for a final contract amount of \$505,476.28. Contract work was completed within the scheduled contract completion date of 1 June 1961. See Appendix No. 17 for the tabulation of bids, and Appendix No. 23 for a tabulation of modifications.

Invitation No. ENG-45-164-61-2, Contract No. DA-45-164-ENG-3626, Re-entry Facilities was issued 22 September 1960, with bid opening on 26 October 1960. Four bids were submitted ranging from \$102,000.00 to \$109,296.00. The Government estimate was for \$99,445.00. Quality Builders of Tacoma, Washington, was the low and successful bidder. Notice to Proceed was issued on 1 November 1960. Five modifications were issued for a final contract amount of \$107,891.02. Contract

work was completed within the scheduled contract completion date of 1 June 1961. See Appendix No. 18 for the tabulation of bids and Appendix No. 24 for a tabulation of modifications.

Controversial opinions and Major Claims. One controversial opinion concerned the overhead charge to be allowed on contract change orders. Approximately seven months after commencement of the main contract, the Government and the prime Contractor agreed to the approach to be used in applying markup to contract changes for the prime Contractor's work only. The mechanical subcontractor's feeling was that his overhead was much higher and in the neighborhood of 26% versus the Government's contention that his allowable overhead varied from 10% to 15%. As a result of this controversy, a continuous argument developed with the Contractor on this issue during settlement of contract changes. To determine the mechanical subcontractor's true overhead on contract changes, an Army Audit Report was conducted at the request of the Contractor for the period ending 31 August 1961. This report justified the Government's general position on reasonable overhead.

The major disputes with the Contractor were those concerning assignment of standardized equipment contracts and justification of time extensions because of work added to the contract by change order. The Contractor's contention is that assignment of the standardized equipment contracts involved assignment of administrative responsibility only. The Government's position is that assignment required the Contractor to take over the contracts and in so doing, the standardized equipment contractors become subcontractors to the Contractor. Claims

have been submitted by the Contractor on specific problems wherein the Contractor alleges that the Government's position in regard to the assigned contractors has created added costs for him.

Another major dispute with the Contractor concerned the amount of time delay created by the individual contract changes. When the negotiation of time was approached on a change by change basis, no agreement could be reached because of the great difference of opinion between the two parties. With no agreement reached, the majority of changes were finalized containing a unilateral determination by the Government. The Contractor then qualified his acceptance of the modification settlement by not agreeing to the Government's time determination.

During the latter stage of the contract, settlement of time was approached on a structure by structure basis to more properly consider the concurrency factor.

A number of major claims (claims over \$100,000) has been submitted by the Contractor. These claims stem from alleged discrepancies in the contract plans and specifications and from acceleration charges. A tabulation of the major claims follows. Those claims marked with an (s) after the claim number have been settled as of 31 May 1962.

<u>Claim No.</u>	<u>Amount</u>	<u>Description</u>
1 (s)	\$ 153,102	Additional Ring Beams
93 (s)	688,428	Recleaning PLS Components
106 (s)	719,405	Acceleration Costs (Partial)
112	173,350	Tunnel Backfill
126	285,000	Repair Welds of Pillow Block Mounts

<u>Claim No.</u>	<u>Amount</u>	<u>Description</u>
130	\$ 306,436	Reclean Flex Hose and Expansion Joints
134	406,492	Revise Equipment Terminal Piping
144 (s)	111,662	Opening Missile Silo Doors
147	238,135	Recleaning S. S. Pipe
152 (s)	13,566,571	Acceleration
154 (s)	107,176	Additional Electrical Work Due to Piping and Duct Changes
Unnumbered Claim (s)	320,445	Recleaning PLS Components
164 (s)	421,582	Additional Shock Mounts in FW System
179 (s)	858,929	Shock Mount Supports for MS Fire Water System
198 (s)	203,898	Additional Punch List Work
248	150,000 (Est.)	Relocation of Embedments
256 (s)	712,082	Additional Acceptance Tests
262	104,913	Conduit Supports, A Tunnel
287 (s)	183,166	Additional Electrical Testing Work
300 (s)	1,497,027	Powerhouse Claim
310	100,000 (Est.)	Increased Electrical Labor Costs & Delay
319	100,000 (Est.)	Unistrut Location Discrepancy in Missile Silo
327 (s)	130,208	Additional Piping and Repairs to C-2 Compressor
336 (s)	104,805	Hot and Chilled Water Piping Tests
340 (s)	162,912	Weber Showcase Acceleration and Impact Claim

<u>Claim No.</u>	<u>Amount</u>	<u>Description</u>
344 (s)	\$ 324,042	Century Metal Acceleration & Impact Claim
345 (s)	354,300	Gilmore-Skoubye Acceleration Claim
346 (s)	102,940	J. I. Haas Co. Acceleration & Impact Claim
347 (s)	111,769	Cleaning F-702 Filter & Upstream Air Lines
348 (s)	6,079,000	Prime Contractor Acceleration & Impact Claim
349 (s)	511,819	Additional Engineering
350 (s)	161,936	Standby Cost of Instrument Air Pressurization
360 (s)	1,380,388	Revisions to Mounts, Piping & Supports in Tunnels and Junctions
363 (s)	1,981,000	A. Neri, Inc. Acceleration Claim
364 (s)	509,405	Comprehensive PLS Construction Claim
371 (s)	1,120,760	Wells Cargo, Inc. Acceleration Claim
372	474,322	KRMPS Tunnel Claim
376 (s)	451,215	Flexible Hoses
379 (s)	103,248	Delays Incurred During PLS Testing
381	465,758	Grafe-Weeks Additional Engineering
383	109,000	Flow Controller Calibration
392	108,528	Piping Changes in Missile Silos and Propellant Terminals

Cost Growth. General comments applicable throughout the project tenure concern cost growth of contract modifications, lack of money in the Contractor's hands, difficulty in settling changes and claims, etc. At the commencement of the program normal contract administrative practices were applied wherein the Contractor was given a change and

an attempt was made to settle price prior to issuing a Notice to Proceed. In the first five months that this procedure was in effect, only eight notices to proceed were issued and of this number, six involved either a no cost change or a credit to the Government. During this period changes had been sent to the Contractor but very few settlements had been made because of the Contractor's reluctance to commit himself on the costs of the changes. By the sixth month it became readily apparent that normal contracting procedures could not be maintained because of the Contractor's delay in submitting cost proposals. This made it mandatory to issue directives to the changes prior to settlement of price to insure that the added materials were ordered in time for the new work to be completed in the normal phase of operations. This new procedure was maintained throughout the remainder of the contract. Six changes were directed in the sixth month of operation and eighteen in the seventh month. Thereafter, an average of nine changes were directed each month immediately upon initial issuance of the change to the Contractor.

Settlement of price on contract changes was extremely difficult. The Contractor delayed in submitting cost proposals and appeared to adopt a wait and see attitude to insure he would not settle under costs. Not until the latter half of 1961 did he appear confident enough in his estimating to enable him to submit cost proposals after only a reasonable period of delay.

The Government also was passing through an educational period during which all previous standards of estimating had to be scrapped.

During the initial phases of the contract, the Government estimate was at extreme variance with the Contractor's proposal, mainly on man-hours. During extensive negotiations with the Contractor and based on field observations, it became apparent that the Government was not considering workmen inefficiencies, turnover of personnel, the extensive use of overtime, congestivity factors, and high time. All these factors are inherent in the missile base construction program and directly affect the cost of contract changes. When these factors were given due consideration, settlement of the changes were often made, based on a revised Government estimate, at several times the original Government estimate. In the latter stages of the project, the estimates were including such factors as: Allowance for inefficiency of labor on overtime, loss of production due to joint occupancy, loss of production in congested work areas, lost productivity of labor on multi-shift operations, premium time and impact and effect.

This continual increase in the Government estimates for contract changes resulted in the necessity to continually revise the programmed funds total upward. The time lag between the initial Government estimate date and the final settlement date was, in major part, due to the Contractor's delay in submitting his cost proposals.

At a time when one-half of the contract work was completed, the Contractor was finally realizing that the work was costing him a substantial amount of "out-of-pocket" money. Major factors affecting Contractor payment included delayed settlement of contract changes and delayed settlement of Contractor's valid claims due to the

Contractor's delayed submittal of information justifying his claims. Not until the latter part of 1961 after the majority of the work was complete, did the Contractor submit his cost proposals and claim backup within a reasonably short period of time. This enabled a proper amount of money for these claims and changes to flow to the Contractor. During this period when the Contractor was being pinched financially, the Government provided more money to the Contractor by providing in each initiating modification a provision for payment as the work was being done. The total monetary amount made available was 85% of the work estimated to be completed at the time it was anticipated the modification would be settled.

Of special note is the qualification used by the Contractor to "keep the door open" on all the modifications. Until 9 February 1961, the Contractor signed all the modifications with no qualifications whatsoever. Approximately 9 February 1961, during the Sheppard Congressional hearings, the Contractor became fully aware of the extensive costs other missile base contractors were encountering on modification work. Thereafter, the Contractor signed all modifications with essentially the following qualification:

"This modification conforms to our cost proposal which covered only the actual performance of the specific items of changed work and which was based upon the conditions existing at the time the proposal was submitted. The cumulative effect of the numerous changes which have been directed by the Government in the work will inevitably result in additional costs and time required for performance of all of

the work to be done under the contract. Therefore, we reserve the right to claim a further equitable adjustment in the contract price and time for performance of all of the contract work as a result of this and other changes and directives to accelerate the work. The amount of such adjustment in the contract price and the amount of the delay to the work which will result from such changes cannot be accurately determined at this time, but claim for such adjustment and extension of time will be presented when the full effect of the impact of such changes on the work as a whole is known to us."

Efforts to negotiate these so-called "impact and effect" costs were to no avail because the Contractor would not commit himself on price. These cost charges were finally submitted as claims at the close of the contract, together with their claims for acceleration.

CHAPTER V

CONSTRUCTION PERIOD

Contractor was given notice to proceed 9 February 1960; the final contract day was 1 April 1962. The entire construction phase of the base was required to be completed within a period of less than 26 months. This rate of production involving as it did some of the most intricate construction ever required of heavy construction forces, was probably without precedent. The prime contractor's work schedule required him to produce \$2,900,000 in construction during a single month as his peak effort and this was comprised primarily of highly technical work. This schedule would have been difficult under optimum conditions; attempting it under the conditions imposed by the "concept of concurrency" required large expenditures in order to overcome the effects of overcrowding and confusion and to complete the work within the time allowed.

The contract required the Contractor to complete all work at Complex C by 1 February 1962, at Complex B by 1 March 1962 and at Complex A by 1 April 1962. Despite the addition of millions of dollars worth of new or revised work, the original over-all completion dates for each Complex were not extended and were, in fact, successfully met by the Contractor. The final structure at Complex C was turned over to the Air Force by ENG Form 290 on 27 January 1962, at Complex B on 27 February 1962 and at Complex A on 14 March 1962. See Appendices No. 6 for turn-over dates of each principal structure, No. 7 for dates upon which principal structures were accepted from the Contractor as

essentially complete and No. 8 for revised dates upon which Contractor was required to complete work upon principal structures.

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