

DELAYS

The most serious delays were occasioned by the great number of changes made to the work. There were also delays caused by scarcity of labor skills, unauthorized labor walkouts, failure of contractor/subcontractor lines of communications, congestion during periods of dual occupancy of facilities by the construction contractors and follow on contractors, etc., but these were relatively minor when compared to the delays due to modifications.

Construction of the Titan I facilities was undertaken under the concept of concurrency which demanded construction starts before final development of the last phases of design. Numerous changes are inherent in this program and were anticipated. The fact that work was not delayed beyond the original need date for the contract as a whole indicates that the calculated risk was successfully taken.

The shortage of certain labor skills in the Mountain Home area as discussed in CHAPTER VI did result in some temporary delays. The Contractor put off taking the expensive steps necessary to overcome the delay factor until he became convinced that he could not complete work within the available time unless he did take these steps. He then began authorizing more overtime and other benefits and was able to attract a labor force of sufficient size and skills to complete the work on time.

There were no strikes called on the project and comparatively few unauthorized walkouts as the following tabulation will show.

<u>Stoppage Began</u>	<u>Work Resumed</u>	<u>Crafts Affected</u>	<u>Man-Days Lost</u>	<u>Reason for Walkout</u>
12 Dec 60	14 Dec 60	Ironworkers	14	Foreman and Steward working Sunday without Journeyman.
23 Jan 61	6 Feb 61	51 Fitters 6 Welders 14 Laborers	531	Union Steward discharged and dissatisfaction with travel pay.
23 Feb 61	27 Feb 61	95 Electricians	235	Jurisdictional dispute.
6 Jul 61	6 Jul 61	46 Plumbers 8 Fitters	17	Delayed pay checks.
27 Jul 61	27 Jul 61	30 Fitters	1	Welding fumes in work area.
2 Aug 61	3 Aug 61	51 Fitters 8 Welders	16	Over-payment of Foreman.
7 Aug 61	8 Aug 61	61 Fitters 34 Electricians	52	Warm drinking water and poor tunnel ventilation.
15 Dec 61	18 Dec 61	17 Fitters 8 Welders	17	Protest non-union technicians.
2 Jan 62	3 Jan 62	15 Pipefitters 5 Asbestos 2 Painters 4 O. Engineers	25 908	Protest use of non-union elevator operator by Hughes Aircraft, an Air Force Contractor.

Joint occupancy in the initial stages was primarily concerned with the installation of communications and power cables by the I & C contractor. The actual work did not interfere to a large extent with facility contractor's operations but did add greatly to the administrative work load of all offices. Also the large number of Air Force surveillance and other personnel added to the congestion in the underground areas. The greatest interference with facility contractor operations by joint occupancy occurred as each missile silo was made available to the Air Force on a BOD basis. At this time, existing

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scaffolds had to be removed, doors lifted off and scaffolds replaced.

Nearly all clean-up work and completion of punch list items was suspended during this period. During the latter stages of construction work the number of I & C personnel was so great as to interfere seriously with late modification work and clean-up of remaining deficiencies.

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MAJOR ACCIDENTS

At a pre-construction safety meeting held 1 March 1960, the contractor submitted a manual containing his proposed safety program. The safety requirements of the contract specifications were reviewed and the potential hazards of underground construction were outlined to the contractor. At the appropriate time during construction the Contractor was required to install safety nets in the missile silos. In addition, safety belts, life lines, basket guards on temporary ladders and other protective equipment were required.

During construction, six accidents occurred which caused fatalities or heavy property damage. The three accidents which resulted in fatalities were:

a. On 21 October 1960 at Complex C a carpenter was helping set forms in Equipment Terminal No. 2. He was installing doughnuts and catheads on form bolts while working from a scaffold 50 feet up from the bottom of the structure. In that area of the scaffold, one plank floor board was lying on the other which left a gap in the flooring. Upon running out of doughnuts he stepped up onto the form to get more and on stepping back down to the scaffold stepped into the gap and fell to the bottom. He died enroute to the hospital. All project employees were instructed not to remove properly placed scaffold boards and to exercise extreme caution when working from scaffolding. (See Plate 40, Figure I).

b. On 25 May 1961 at Complex B an electrician, while reporting

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to work, was climbing down a temporary ladder from Level 3 to Level 2 in Equipment Terminal No. 1. He was carrying his lunch pail in one hand and supposedly hanging onto the ladder with the other. He fell 16 feet backwards through the opening to the next level, landing on his head and fracturing his skull. He died enroute to the hospital. All employees were cautioned to exercise proper care on ladders and to use hand lines to lower objects. When permanent ladders became available, temporary ladders were removed. (See Plate 40, Figure II).

c. On 15 February 1962 at Complex A a painter fell down the ladder which leads to the bottom of the Portal Silo. He fell approximately 11 feet onto the spring beam shock mounts and ruptured his liver. He died enroute to the hospital. All employees were cautioned to be alert and careful in the use of this type of ladder. (See Plate 41, Figure I).

The three accidents which caused heavy property damage were:

a. On 26 May 1960 during excavation of Missile Silo No. 3 at Complex C, a Manitowoc Crane with front end loader fell 65 feet into the shaft. The estimated damage was \$150,000. The crane was lifting a 28-ton front end loader out of the shaft. As the load neared the top the line began to slip and allow the load to drop. By the time the operator set the drum brakes the load had enough momentum to pull the crane over and into the shaft. The operator jumped clear. The Contractor was allowed to disconnect the dead man controls when loads in excess of 10 tons were handled in order to prevent a sudden accidental application of brakes. (See Plate 41, Figure II).

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b. On 15 June 1960 at Complex A a "C" Pull backed into

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Propellant Terminal No. 2 shaft. Total damage was estimated at \$9,000. The machine had mechanical failure and was out of control as it backed toward the shaft. The operator tried to jump clear when the unit started into the shaft but was flipped by the front wheel. He fell on his head and shoulders on the concrete collar suffering a serious injury from which he recovered. (See Plate 39, Figure I).

c. On 23 February 1961 during blasting operations for excavation of Type "D" tunnel No. 2 at Complex A, the concrete walls of the Propellant Terminal were extensively cracked. Total damage was estimated at \$30,000. Since remaining blasting was minor, no corrective action was taken. (See Plate 39, Figure II).

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By the time PLS testing was ready to begin, safety procedures were established and equipment such as safety lamps and emergency oxygen breathing units were provided. Fire and rescue teams were organized and trained, rescue equipment was on hand and an evacuation plan was developed.

Due to the fact that a full time safety officer could not be obtained, the Area Engineer designated the Chief of Construction Branch as Safety Officer. When PLS testing was started, two individuals in the PLS Branch were designated as Assistant Safety Officer; one covering the PLS System Testing and the other the RP-1 System Testing. During the last two months of the contract, safety engineers were obtained on TDY and an integrated safety program was developed with the Air Force Associated Contractors. The use of safety nets and safety equipment was enforced as long as the missile silos were under the supervision of the Corps of Engineers.

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The Missile Silo doors were carefully opened and secured with heavy "I" beams bolted to the parapet foundation to prevent accidental closing. They remained open when turned over to the Air Force. (See Plate 17, Figure II).

Normal weather hazards such as snow, ice and mud existed at times during the fall and winter months, but due to adequate preventive measures they did not contribute to any major accidents. The accidents that did occur all happened above ground when the weather was fair and warm or below ground when no particular hazardous conditions existed. Most accidents were the result of human error or carelessness. The equipment was either new or in good repair and was tested regularly by the Corps of Engineers.

COMBINED GOVERNMENT AND CONTRACTOR ACCIDENT RATES

<u>Year</u>	<u>Manhours</u>	<u>Lost Time Injuries</u>	<u>Fatalities</u>	<u>Days Lost</u>	<u>Frequency Rate</u>	<u>Severity Rate</u>
60	1,150,831	14	1	6,288*	13.3	5.45
61	2,782,891	8	1	6,330*	2.87	2.28
1 Mar 62	<u>323,424</u>	<u>2</u>	<u>1</u>	<u>6,042*</u>	<u>1.12</u>	<u>3.37</u>
	4,257,146	24	3	18,660*	5.64	4.38

* Arbitrary assessment 6,000 days for each fatality.

SPECIAL EVENTS

4. Following is a chronological tabulation of special events and visits:

7 Mar 60 Ground breaking ceremony Titan I at Site "C" attended by Governor Smylie

14 Jun 60 Tour Site "C" by General Walsh and Selective Service officials

17 Jun 60 185th Anniversary of U. S. Army Corps of Engineers Presentation of pins, awards, etc., at Mountain Home Area Office

27 Jun 60 Brigadier General Allen F. Clark (NPD), Brigadier General N. K. Kelley (AF - Deputy Director Civil Engineers for Construction, Washington, D. C.), Colonel Eric Dugan (AFCRE)

12 Jul 60 Presentation of chrome-plated ground breaking shovel to Governor Smylie of Idaho

20 Jul 60 Senator H. Dworshak, Representative (Idaho), visited Site "C"

31 Aug 60 Governor Smylie visited Site "C"

8 Sep 60 Senator Frank Church, Idaho, visited Site "C"

12 Oct 60 Transfer Ceremony to CERMCO, Site "C"

23 Nov 60 Major General Keith R. Braney (Deputy Chief Engineers for Construction, OCE)

9 & 10 Jan 61 General Welling visit

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27 Mar 61 Lt. Col. Ward Bankert, AMC, BMC

23 Feb 61 Brigadier General Don Coupland, Vice Commander,
Hqs. AMC, BMC, Los Angeles, visited Site "C" accom-
panied by Governor Smylie

31 Jul-1Aug 61 Secretary of Labor, Arthur J. Goldberg and party,
visited Site "C"

13-20 Oct 61 Congressman Harry R. Sheppard (Subcommittee on Mili-
tary Construction Appropriation, FY 62)

14 Oct 61 Col. E. L. Grider, SFFO, EIG (Inspection, Mountain
Home, 15 October 1961)

4 Jan 62 Major General T. P. Gerrity, Commander Hq. BSD and
Major General A. C. Welling, Deputy for Site Acti-
vation, BSS visited Mountain Home, conference, SATAF,
etc.

7 Feb 62 Brigadier General H. K. Kelley, Deputy Director
Civil Engineer for Construction, Washington, D. C.,
and party

30-31 Mar 62 Major General T. P. Gerrity, Major General A. C.
Welling and party.

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