TITLE: TECHNICAL FACILITY CRITERIA FOR THE MINUTEMAN LAUNCH FACILITIES - FRANCIS E. WARREN AFB, WYOMING (U)

MODEL NO. WS-133A  CONTRACT NO. AF04(69)-107

ISSUE NO. 9  ISSUED TO  

SPECIFICATION: S-133-30-15

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PREPARED BY  D. E. Dougald  6-17-63
SUPERVISED BY  R. O. Smith  6-19-63
APPROVED BY  G. A. Gutkowski  6/19/63
APPROVED BY  H. M. Stiverne  6/19/63
CLASS & DISTR. APPROVED BY  G. A. Gutkowski  6/19/63

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BOEING
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SECT.  | PAGE 3
The original requirements for the WS-133A Launch Facilities were initially presented in STL document GM 60-A001-04702 (S-133-30-10). The STL document covered facilities design criteria as well as the form, fit, and function requirements of the Associate Contractors' equipment for Minuteman Wing I at Malmstrom AFB, Montana.

State of the art progress has dictated numerous changes and improvements to the original Launch Facility requirements. A large number of these variations were incorporated into Wing I by a revised and updated GM 60-A001-04702 (S-133-30-10) issued as Boeing document D2-14324. Variations peculiar to Minuteman Wing II at Ellsworth AFB, South Dakota, were included in Boeing document D2-10692 which was issued as a supplement to the Wing I criteria document and was limited to changes and additions thereto.

Subsequent revisions to the Launch Facility requirements and improvements to the Weapon System, dictated the need for an original documentation of the facilities criteria for Wing III, North Dakota, in Boeing Document D2-13797. The first revision to Boeing Document D2-13797 incorporated criteria variations peculiar to Wing IV facilities at Whiteman AFB, Missouri.

Normal sequence of events would have placed the facilities design criteria in the hands of the Air Force agency awarding the facility contracts prior to the start of facilities design. Because of the Minuteman program concept of design and construction concurrency and also due to compressed schedules, this action did not occur for Wings III, IV and V. Nevertheless, the necessity for this document, as a base line for control of the form, fit, and function of the Associate Contractors' equipment, is most significant if existing facilities are to be used to the maximum extent practical.

Wing III criteria has been modified and updated to indicate Wing V requirements as a result of the following actions:

1. Collation of facility requirements which were developed through MIL-D-9412c Functional Analysis of the Wing V Weapon System (S-133-11-0-5) and S-133-11-0-5;
2. Incorporation of basic design and equipment compatibility changes as designated by the Configuration Control Board;
3. Incorporation of MCL/FCR changes through 15 May 1963;
4. Incorporation of facility design improvements resulting from criteria and concept review meetings;
5. Review and Analysis of existing plans and specifications and "Basis of Design" for Wing V.
This specification describes the facility requirements necessary to make the Weapon System operable within established goals, with due consideration given to the existing facilities and associated conditions.
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1.0 SCOPE

The technical facility criteria document for the Minuteman Launch Facilities at Francis E. Warren AFB is issued as a supplement to the Wing III Launch Facility criteria presented in Boeing Document D2-13797. The complete Wing V Launch Facility criteria consists of the following:

a. Sections one (1) through ten (10) of Document D2-13797 applicable to Wing III and Wing V.

Section eleven (11) of Document D2-13797 identifies Wing IV peculiar criteria only, and is not applicable to Wing V.

b. Document D2-14826 which identifies the revised or additional requirements to site adapt and upgrade the Minuteman Launch Facilities for Francis E. Warren AFB in accordance with the latest Weapon System improvements. These requirements are identified by Paragraph and Figure notations corresponding to those in Document D2-13797. Where necessary, flagnote indicators are included on the Figures to assist in identifying FWMBF peculiar variations.
2.0 APPLICABLE DOCUMENTS

Change to read "Master Change Log updated as of 15 May 1963."
3.0 GENERAL / CRITERIA

3.1.3 Physical Description

Change reference from "Minot Air Force Base (MTAFB)" to read "Francis E. Warren Air Force Base (FWAFB)".

3.3.1 Geographical

Change paragraph to read "Wing V, the fifth Minuteman Operational Deployment Area, shall be sited in the vicinity of Francis E. Warren Air Force Base, (FWAFB) at Cheyenne, Wyoming."

3.5 Table 3-1, "RPIE Sub-System Failure Rates"

Failure Rates are based on 150 missile wing. Values should be proportioned to reflect failure rates for 200 missile wing.

3.6 SUMMARY OF CHANGES TO SECTION 3 FIGURES.

3.6.1 Title of Figure 3-1 should read Francis E. Warren Air Force Base, Wyoming.
5.0 INTEGRATED CRITERIA

5.10 Table 5-1 Launch Facility AGE

The following Wing V peculiar Launch Facility AGE should be entered in the corresponding item numbers of Table 5-1. These Wing V peculiar Figure "A" numbers are applicable throughout Document D2-13797 wherever corresponding equipment is referenced.

<table>
<thead>
<tr>
<th>Item No.</th>
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<td>1248.5</td>
<td>Cable Assembly Set</td>
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<td>8</td>
<td>1322.5</td>
<td>Support, Missile, Suspension and Alignment System GSU-112/E</td>
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<td>14</td>
<td>1228.5</td>
<td>Status - Command Message Processing Group OA-3594/GYK-2</td>
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<td>1251.5</td>
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<td>25</td>
<td>1374.5</td>
<td>Arrestor Set, Electrical Surge MX /GSW-4</td>
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<td>27</td>
<td>1377.5</td>
<td>Interconnecting Box J-1386/GSW-4</td>
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5.11 SUMMARY OF CHANGES TO SECTION 5 FIGURES.

5.11.1 Figure 5-3.1 is revised to indicate the FWAFB peculiar layout of intrasite cabling and conduits between the Launcher and LSB.

5.11.2 Figure 5-4 is revised to show peculiar conduit layout to grounding points for FWAFB.
6.0 SERVICE AREA AND ACCESS ROAD CRITERIA

6.10 SUMMARY OF CHANGES TO SECTION 6 FIGURES

6.10.1 Figure 6-7.4 deletes Security J-Box located near XMTR antenna and also the 2" c.o. extending between the Security J-Box and the S/R RCVR. A conduit is added between the Launcher and the S/R RCVR.

6.10.2 Figure 6-7.6 deletes Detail 1 and Section A of the Security J-Box.
7.0 LAUNCHER SUPPORT BUILDING CRITERIA

7.7 SECURITY

Delete reference to "Security J-Box" in last sentence of paragraph. Sentence should read "An interface cabinet shall be installed, with provision for termination of all security system wiring herein, as shown in Figures 7-2.3 and 7-3."

7.8 SUMMARY OF CHANGES TO SECTION 7 FIGURES

7.8.1 Figure 7-1 indicates the change in size of hydraulic lines from \( \frac{1}{2} \)" to \( \frac{3}{4} \)" and relocates penetration of the \( \frac{1}{4} \)" sump pump drain line.

7.8.2 Figure 7-1.1 shows relocation of 2" air relief line in Detail 1, and changes horizontal dimension from 5'-6" to 6" from fresh air intake to exterior surface of LSB wall in Section B.

7.8.3 Figure 7-2 indicates modifications to the electrical equipment layout in plan and section.

7.8.4 Figure 7-2.1 relocates the intrasite cable penetrations at the LSB exterior wall.

7.8.5 Figure 7-2.2 specifies the variations to the location of openings and J-boxes in the LSB shock mounted floor.

7.8.6 Figure 7-2.3 is added to show the switchboard panel elevation and necessary details.

7.8.7 Figure 7-3 shows the wiring connection schematic for the Interface Cabinet. In lieu of a separate Security Terminal Cabinet as used in Wing III, the necessary security terminals shall be incorporated in the Interface Cabinet for Wing V.
TB-3

1. TO NORTH COVER PLATE DS #1
2. TO NORTH COVER PLATE DS #2
3. TO SOUTH COVER PLATE DS #1
4. TO SOUTH COVER PLATE DS #2
5. TO LSB GRATING SW #1
6. TO LSB GRATING SW #2
7. TO GATE DS #1
8. TO GATE DS #2
9. TO LSB ACCESS HATCH DS
10. TO ESA J-BOX LAUNCHER
11. SHIELDING

TB-1

1. TO ENGINE CRANKING PANEL (IN SWITCHBOARD)
2. TB4-11
3. TB4-12
4. TB4-14
5. TB4-15
6. TB4-17
7. TB4-18
8. TB4-19
9. TB4-20

TB-2

1. C-3a
2. NEUT.
3. C-3b
4. TO LIGHTING CONTACTOR (IN SWITCHBOARD)
5. TB-2
6. 1
7. 2
8. 3
9. 4
10. 5
9.6 LAUNCHER EQUIPMENT ROOM CRITERIA

9.2.4 Sight Tube

Change dimension in Sentence "A Sight Tube, 24 inches maximum diameter ..." to read "A sight tube, 12 inches maximum inside diameter ...".

9.8 SUMMARY OF CHANGES TO SECTION 9 FIGURES

9.8.1 Figure 9-1.4 changes configuration of stiffener plates at umbilical retraction unit, Detail 1.

9.8.2 Figure 9-1.6 shows changes to electrical conduit arrangement and conduit sizes at LER wall penetration.

9.8.3 Figure 9-1.7 shows interface change at brine supply and return lines, Section A; and indicates a change in requirements for conduit penetration of line., Detail 2.

9.8.4 Figure 9-2 shows the Sight Tube inside diameter change from 24" to 12".

9.8.5 Figure 9-2.3 indicates the changes in stub-out locations and configuration of 4" copper plate grounding bus.

9.8.6 Figure 9-6 shows azimuth change from 168° to 166° for telephone jack mount location in the launch tube.
PIPE SUPPORT (TYPE)
2" FRESH AIR INTAKE
3" BORE RETURN LINE
3" BORE RETURN LINE
TERMINATE BORE LINES WITH 6" LONG 1/2 FEMALE NIPPLE THREAD AND CAP END

SECTION A

HEAVY WALL THREADED COUPLING
8" MIN.

DETAIL 1

TYPICAL HARDENED CABLE PENETRATION

SECOND LEVEL FLOOR

SAFETY HEAD

TERMINATE CONDUIT NIPPLE Flush with SURFACE OF LAUNCH TUBE LINER. REAM CONDUIT NIPPLE TO PROVIDE SMOOTH EDGES.

SECOND LEVEL FLOOR

DETAIL 2

TYPICAL LAUNCH TUBE LINER PENETRATION

15° MAX.

3" C. FOR AZIMUTH DRIVE CABLE
1/2" C. FOR TELEPHONE CABLE
1/2" C. FOR MPT
1 1/2" C. FOR BUMP PUMP
5/8" C. FOR MISSILE GROUND

20" FOR 3" PENETRATION
15" FOR 1 1/4" PENETRATION

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10.0 LAUNCH TUBE OF TERRA

10.2.1 Layout

Item b, change dimension in statement "length from flame deflector to the Autocollimator line-of-sight: 65'-2" to read 75'-2"."

10.8 SUMMARY OF CHANGES TO SECTION 10 FIGURES

10.8.1 Figure 10-1 indicates the change in Launch Tube length measured from bottom of Closure to top of deflector plate from 77'-0" to 87'-0"; and adds the 10'-0" allowance for missile growth.

10.8.2 Figure 10-3 deletes the 14'-0" dimension from deflector plate to center-line of sump pump discharge line horizontal run; and indicates embedment and modification to layout of sump pump discharge line and battery drain line. Dimensional changes are shown from deflector plate to MPT J-Boxes.

10.8.3 Figure 10-3.1 deletes Detail 1 showing minimum attachment and proximity relationships between MPT J-Box and sump pump discharge line; and shows requirement for embedding sump pump discharge line in launch tube wall.

10.8.4 Figure 10-4, Details of typical butt joint in monorail track are changed to show increased "faired to match" requirement from 2 1/2" to 4".

10.8.5 Figure 10-6 shows increased dimension range from deflector plate to load point at upper missile support plate from 20'-3" to 26'-3" to 30'-3" to 36'-2".

10.8.6 Figure 10-6.1 modifies dimension from deflector plate to top of upper support plate from 29'-1" to 39'-1". At Section A the dimension from centerline to outside edge of upper support plate is changed from 1'-0" to 1'-0 5/16".