

**BY ORDER OF THE COMMANDER  
AIR FORCE GLOBAL STRIKE COMMAND**

**AIR FORCE GLOBAL STRIKE  
COMMAND INSTRUCTION 32-1005**



**19 FEBRUARY 2019**

**Civil Engineering**

**INTERCONTINENTAL BALLISTIC  
MISSILE (ICBM) REAL  
PROPERTY/REAL PROPERTY  
INSTALLED EQUIPMENT (RP/RPIE)  
RESPONSIBILITIES AND ICBM  
INFRASTRUCTURE AND EQUIPMENT  
(IIE) RESPONSIBILITIES**

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This instruction implements Air Force Policy Directive (AFPD) 32-10, *Installation and Facilities and Program Action Directive (PAD) D16-01, Centralized Management of the Nuclear Enterprise*. It describes the requirements for all organizations responsible for operating, maintaining, repairing, constructing, and altering Intercontinental Ballistic Missile (ICBM) Real Property/Real Property Installed Equipment (RP/RPIE) and ICBM Infrastructure and Equipment (IIE). This instruction interfaces with Air Force Instructions (AFIs) in the 21 (Maintenance), 32 (Civil Engineering), 63 (Acquisition), and 91 (Safety) series publications. Additional instructions that relate to this instruction are included in the reference section of this document. This instruction applies to Air Force Global Strike Command and Air Force Space Command Civil Engineer Squadrons with Missile Engineering support personnel, operational, and test/ training ICBM units. This publication does not apply to the Air Force Reserve Command (AFRC) or the Air National Guard (ANG) and their units. Requirements of this publication must be implemented within 180 days unless otherwise noted within specific paragraphs. Units will contact the applicable MAJCOM for interpretations of the guidance contained in this AFI. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate functional' s chain of command. Ensure

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### ***SUMMARY OF CHANGES***

This document has been substantially revised and must be completely reviewed. Additionally, AFGSCI 32-1009 has been rescinded; relevant content has been incorporated into **chapter 7** of this instruction. Changes include, but are not limited to, updating AFNWC/NIH, AFGSC/A4C, and supporting Civil Engineering Squadrons responsibilities, IIE maintenance guidance, updating training requirements and re-flowing responsibilities and consolidating chapters.

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## Chapter 1

### MISSION

#### 1.1. General Information

1.1.1. Headquarters (HQ), Numbered Air Forces, Missile Wings (MW)/576 FLTS, and Base Civil Engineers (BCE) co-located with MWs/576 FLTS manage Intermediate and Organizational-level maintenance of ICBM IIE and RP/RPIE in accordance with (IAW) Air Force standards. All maintenance actions and management efforts must be directed toward maximum availability of ICBMs in support of the United States Strategic Command requirements and directives.

1.1.2. AFGSC/A4C and AFNWC/NIH enable ICBM operations and readiness through the analysis, testing, maintenance, sustainment, repair, and modernization of IIE, RP, and RPIE at Air Force ICBM Launch Facilities (LFs), Missile Alert Facilities (MAFs), training and test facilities, and the interface with Aerospace Ground Equipment (AGE) and IIE.

1.1.3. The AFGSC/A4C, applicable BCE functions, and Missile Maintenance Groups, in coordination with the AFNWC ICBM Infrastructure and Equipment Office (NIH), are responsible for configuration control, limited depot level maintenance, engineering, modifications, hardness assurance, engineering support, technical surveillance, and guidance to maintenance in support of the weapon system.

#### 1.2. Recommended Changes

1.2.1. Submit instruction changes to AFGSC/A4C, Barksdale AFB, LA 71110.

#### 1.3. ICBM RP/RPIE and IIE Categorization

1.3.1. The ICBM RP/RPIE and IIE will be categorized by the function of the mission the item supports in the following areas:

1.3.1.1. Category I. Weapon system hardness critical equipment is defined as individual ICBM RPIE/IIE items that directly support Emergency War Order (EWO) and are under the management of AFGSC/A4C, AFNWC/NIH. Equipment in this category includes items located within the LF and direct supporting equipment to the Launch Control Center. Weapon system hardness critical equipment information shall be maintained in applicable Civil Engineer Manuals (CEM) or Technical Order (TO). Direct questions requiring specifics of the sub-systems involved to AFGSC/A4C, AFNWC/NIH. See [Attachment 2; Table A2.1, Table A2.2, and Table A2.3](#).

1.3.1.2. Category II. Weapon system support equipment is defined as ICBM RP, ICBM RPIE, and/or IIE items that cannot be classified in paragraph [1.3.1.1.](#), but serve in a supporting role to the mission critical facility and are under the direct control of the Chief Missile Engineer and AFGSC/A4C, and/or AFNWC/NIH respectively. Examples of such equipment are but not limited to: The MAF fire suppression system, MAF elevator, MAF topside electric heaters, water treatment equipment, etc. Weapon system support equipment information shall be maintained in the applicable CEM or TO. See [Attachment 2; Table A2.1, Table A2.2, and Table A2.3](#).

1.3.1.3. Category III. Noncritical support equipment is defined as those items that are normally within the scope of Civil Engineer (CE) maintenance and support or Chief Missile Engineer. These items/systems may include items that require a maintained record of inventory. The BCE is required to maintain normal real property records. Examples of such equipment are but not limited to: The MAF topside electrical outlets, lighting fixtures, bathroom fixtures, etc. See [Attachment 2](#); [Table A2.1](#), [Table A2.2](#), and [Table A2.3](#).

1.3.2. Due In for Maintenance (DIFM) items:

1.3.2.1. The DIFM items that are/or a part of IIE systems may not be purchased by any other means than through base supply. (T-2)

1.3.2.2. Procedures to track, repair, and dispose of DIFM items are contained in AFMAN 23-122, *Material Management Procedures*. A list of DIFM repairable items can be found in CEM 21-SM80-18, *Maintenance Support Plan*.

#### **1.4. Unauthorized Substitutes in Missile Facilities (Category I and II Parts Only)**

1.4.1. Unless authorized in an Advance Data Package (ADP) Facility Engineering Analysis Test (FEAT) or One-Time Technical Data approved by the Chief Missile Engineer, AFGSC/A4C or AFNWC/NIH, it is never permissible to install any component or part thereof in Missile Facility ICBM RP/RPIE or IIE other than what is listed in the applicable CEM/TO. (T-2)

1.4.2. To ensure configuration control and prevent a situation where a wrong part is received from Base Supply because the part number crosses to a National Stock Number, which lists other manufacturers/part numbers in addition to those listed in the CEM/TO; always include the following information when ordering replacement parts for IIE: applicable CEM/TO number, page, and figure reference; manufacturer's name and part number specified in the CEM/TO; code 2B in columns 63 and 64; and the words "Command policy precludes installation of parts other than those specified in applicable CEMs/TOs in missile facilities and will not be accepted" in the remarks block.

1.4.3. CEMs with National Stock Number parts, with an asterisk, shall be ordered using the identified National Stock Number.

## Chapter 2

### MISSILE ENGINEERING

#### 2.1. AFGSC/A4C

- 2.1.1. Performs engineering management, program execution, day-to-day operations and management of ICBM RP/RPIE programs. Division has overall responsibility for ICBM RP/RPIE system reliability, modification, corrosion, and configuration control. **(T-2)**
- 2.1.2. Implements management directives and Command guidance for engineering on modification, construction and support test programs for ICBM facilities RP/RPIE. **(T-2)**
- 2.1.3. Chairs the Missile Facility Alteration Panel (MFAP) or designates alternate. **(T-2)**
- 2.1.4. Performs engineering management, program execution, day-to-day operations and management of ICBM RP/RPIE programs affecting HQ AFGSC's ICBM fleet and has overall responsibility for system reliability, modification, and configuration control. **(T-2)**
- 2.1.5. Executes and manages HQ level projects and programs. **(T-2)**
- 2.1.6. Validate and advocate for ICBM RP/RPIE requirements through AF Installation and Mission Support Center (AFIMSC) centralized sustainment programs. **(T-2)**
- 2.1.7. Provide engineering support, with AFIMSC assistance as needed, to engineer, plan, manage, implement, and execute ICBM RP/RPIE requirements. **(T-2)**
- 2.1.8. Review accuracy, adequacy, and feasibility of engineering designs, technical specifications, test procedures, modifications, and technical data procedures. **(T-2)**
- 2.1.9. Develop and maintain technical procedures and manuals for maintenance, repair, modification, operation, troubleshooting, checkout, adjustment, inspection, and servicing of ICBM RP/RPIE supporting operational and test ICBM facilities. **(T-2)**
- 2.1.10. Prepare CEMs for publication (i.e. CEM 21-SM80-19 Vol X). **(T-2)**
- 2.1.11. Manage improvement program for CEMs. **(T-2)**
- 2.1.12. Ensure required weapon system hardness requirements are coordinated with AFNWC/NIH during all phases of development, deployment, and sustainment of ICBM RP/RPIE. **(T-2)**
- 2.1.13. Review and develops specifications and necessary documentation for central buy actions of ICBM RP/RPIE. **(T-2)**
- 2.1.14. Maintain database of construction and as-built drawings. **(T-2)**
- 2.1.15. Validate ICBM RP/RPIE as-built drawing changes to ensure accuracy and adequacy. **(T-2)**
- 2.1.16. Assist with Long Range Planning for ICBM RP/RPIE. **(T-2)**
- 2.1.17. Manage Defense Access Road (DAR) program for the Minuteman Weapon System primary transport routes. **(T-2)**
- 2.1.18. Coordinate with HQ AFGSC/A4B in support of ICBM RP/RPIE. **(T-2)**

2.1.19. Communication focal point between AFNWC/NIH and base missile engineer flights (MEFs) in regards to all RP/RPIE/IE modification requests, technical SME support, CEM change requests, and construction project requirements information.

## **2.2. MFAP**

2.2.1. The MFAP is the approval/disapproval authority for all ICBM RP/RPIE modifications. The MFAP resolves difficulties affecting operation, maintenance, and system modifications with all affected agencies.

2.2.2. The MFAP consists of representatives from the following organizations: HQ AFGSC A4C (serves as the chair), A3N, A4B, A5, SEW (Nuclear Weapon Safety), AFNWC/NIH, and any agencies requested to be in attendance (i.e. Bioenvironmental, Inspector General and Security Forces). Approved modifications will be issued as CEM MCLs or Record CEM MCLs. **(T-2)**



### Chapter 3

#### BASE CIVIL ENGINEER

#### 3.1. Responsibilities

- 3.1.1. Ensure personnel assigned for missile facilities maintenance support are used for this purpose on a priority basis prior to performing other work. **(T-3)**
- 3.1.2. Work closely with MW and MSG/576 FLTS commanders to resolve issues relating to ICBM RP/RPIE and IIE. **(T-3)**
- 3.1.3. Provide flood/snow control resources to support the ICBM weapon system. **(T-3)**
- 3.1.4. Provide certified welding support IAW TO 00-25-107, *Maintenance Assistance*, and 00-25-252, *Aeronautical Equipment Welding*, to maintain ICBM weapon system equipment. **(T-2)**
- 3.1.5. Maintain missile site structures and grounds not related to hardness, survivability, sustainability, nuclear surety, and launch IAW AFI32-1001, Operations Management. **(T-2)**
- 3.1.6. Ensure MAF utilities are properly permitted for operation IAW state and federal regulations.
- 3.1.7. Maintains and inspects on-base routes and Air Force-owned missile access roads IAW paragraph 9.6.4. **(T-2)**
- 3.1.8. Maintain Hardened Intersite Cabling System right of ways. **(T-3)**
- 3.1.9. Maintain, repair and replace fences and gates, correct right-of-way erosion, and missile facility topography. **(T-3)**
- 3.1.10. Implement a program to provide nontechnical information training (i.e., safety, security, and management) applicable to duty performance. See [Table 3.1.](#) for course requirements levied by this instruction. **(T-2)**

**Table 3.1. Non-Technical Training Requirements**

Training Block	Category of Personnel	Frequency of Training	Reference	OPR Trainer
1. Missile Safety	Note 1	Note 3 Note 9	AFI91-202	Squadron Missile Safety Officer/NCO or MW/576 FLTS Training
2. Corrosion Control	Note 1 Note 2	Note 3	AFI32-1054	MW/576 FLTS Note 6

3. Life Support Training (Cold Weather Orientation)	Note 5	1 Time	AFI21- 202 Vol 1	Note 6
4. Maintenance Management	Note 1 Note 2	Note 4	AFGSCI32-1005	Missile Engineer
5. Maintenance Data Collection	Note 1 Note 2	Note 4	TO 00-20 Series and AFGSCI32-1005	Missile Scheduling
6. Technical Data	Note 1 CEM Librarians	Note 4 Note 8	TO 00-5-1	Note 6
7. LF/MAF Orientation and Weapon System Briefing	Note 1 Note 2	Note 4	TO 21M-LGM30G-1	Note 6
8. MEEDS	Individuals required to authenticate	As required	AFGSCMAN31-108	Note 6
9. Minuteman Hardness Awareness Training Film	Note 7	Annual	AFGSCI32-1005	Missile Engineer
10. Integrated Management Data System (IMDS)	Note 7	As required	TO 00-20 Series and AFGSCI32-1005	Missile Maintenance (MXG)

**NOTE:**

1. Technicians required to receive nontechnical training to include Missile Schedulers, Material Control Section, and dispatching personnel (e.g., 3E0X1, 3E0X2, 3E1X, 3E2X1, 3E3X1, 3E4X1, and 3E4X3).
2. Supervisory personnel receive nontechnical training include BCE, Deputy BCE, Missile Engineer, Operations Flight, Chief and Deputy, Superintendents, and shop supervisors.
3. Prior to initial dispatch to an LF/MAF and thereafter as prescribed by the applicable directive.
4. Initially within 90 days of assignment.
5. Cold weather orientation for missile support personnel at F. E. Warren, Minot and Malmstrom Air Force Bases.
6. OPR trainers determined locally.
7. Missile engineers and technicians who perform field or shop maintenance on LF and MAF equipment.
8. Refresher training on posting and filing procedures. Annual requirement for those individuals that maintain individual files of CEMs and TOs.
9. Training is valid through the last day of the anniversary month. Personnel may dispatch through the end of the month per AFI91-202, *The US Air Force Mishap Prevention Program*. Overdue personnel may NOT dispatch until the over-due training has been satisfactorily reaccomplished.

## Chapter 4

### BASE MISSILE ENGINEER FLIGHT (MEF)/MISSION ENGINEER SECTION

#### 4.1. Responsibilities

##### 4.1.1. Chief Missile Engineer

4.1.1.1. Provide limited depot-level maintenance support and assist in resolving missile operation and maintenance problems. **(T-3)**

4.1.1.2. Evaluates AFGSC Form 286, *Facility Change Initiation Request (FCIR)*, AFGSC Form 287, *Facility Engineering Analysis Test (FEAT) Request*, and AFGSC Form 272, *RPIE Improvement Report*, and forwards forms to AFGSC/A4C for coordination and final approval. In absence of the Chief Missile Engineer, designated engineering authority may sign these forms. **(T-3)**

4.1.1.3. Maintains a control log and assign control numbers to AFGSC Form 272. Maintains current status of these reports and coordinates with appropriate agencies. The Base Missile Engineer is the final local approving authority on the AFGSC Form 272 and forwards the form to AFGSC/A4C. **(T-2)**

4.1.1.4. Maintains a control log of all FCIRs and all modifications in work or pending scheduling actions (e.g. FEATs, MCLs, local projects, etc.) and assigns control numbers. **(T-3)**

4.1.1.4.1. Conducts reviews on draft MCLs. This review is used to determine effects of the MCL on wing operations, support needed to accomplish an MCL, and determine office of primary responsibility. Reviews will be coordinated with Operations Group (OG), Maintenance Group (MXG), 576 FLTS, and organizations with the expertise and interest in the MCL. Provides AFGSC/A4C with review comments within 30 days of receipt of draft. **(T-2)**

4.1.1.4.2. All IIE modifications performed by BCE or contracts shall be documented in Integrated Maintenance Data System (IMDS). IMDS will be used to schedule, track, and document IIE modification work. **(T-3)**

4.1.1.4.3. Submits MCL completion packages to AFGSC/A4C per paragraph 6.7. **(T-3)**

4.1.1.5. Ensure equipment and facilities are maintained IAW AFI, CEMs, weapon system criteria, and configuration control, hardness, and nuclear surety requirements. **(T-2)**

4.1.1.6. Manages engineering designs for local projects/contracts and supports special projects as directed by AFGSC/A4C. **(T-3)**

4.1.1.7. Ensures TRIRIGA by Contract Management System files are up to date. **(T-3)**

4.1.1.8. Provides consulting and problem solving services for all agencies performing work and ICBM RP/RPIE maintenance issues. **(T-3)**

4.1.1.9. Investigates and takes action in areas causing delay in the performance of MCLs, including all material acquisition actions and report findings to AFGSC/A4C. **(T-2)**

- 4.1.1.10. Maintains a BCE CEM Master library. **(T-2)**
- 4.1.1.11. Approves, develops and distributes local CEM Interim Changes (CEMICs) and provides a copy to AFGSC/A4C. **(T-2)**
- 4.1.1.12. Reviews all CE requests to weld in ICBM facilities IAW TO 21M-LGM30G-12, Special Maintenance Modification Safety and Electromagnetic Interference Provisions Wings I, III, V, and VAFB. **(T-2)**
- 4.1.1.13. Notifies power companies of power outages occurring at MAFs and LFs, and works with Missile Maintenance Operations Center (MMOC) to restore commercial power. **(T-3)**
- 4.1.1.14. Reviews the Time Compliance Technical Order (TCTO)/MCL status report and reports any discrepancies to MXG/576 FLTS Plans and Scheduling Section. **(T-3)**
- 4.1.1.15. Observes 5-year elevator inspections and, on a random basis, observes elevator hoisting, governor, and traveling cable repair and/or replacement. **(T-3)**
- 4.1.1.16. Coordinate IIE Deficiency Reports with MXG/576 FLTS. **(T-3)**
- 4.1.1.17. Identifies and authorizes temporary substitution of identical equipment or components per paragraph 6.2. **(T-3)**
- 4.1.1.18. Assists AFGSC/A4C with data collection to develop MCLs. **(T-3)**
- 4.1.1.19. Reviews and coordinates the MW/576 FLTS flood control plan. **(T-3)**
- 4.1.1.20. Manages the Construction, Surveillance, and Inspection (CSI) program. **(T-3)**
- 4.1.1.21. Investigates and determines along with county, state, and federal partners, the required corrective measures for primary missile road deficiencies per **Chapter 9**. **(T-3)**
- 4.1.1.22. Provides annual missile road funding requirements, including estimates for Extraordinary Maintenance (EM) and Extraordinary Snow Removal (ESR) to AFGSC/A4C for incorporation into the AF budget request. Forecasts missile road, bridges, and structures repair requirements for the following 5 Fiscal Years. **(T-3)**
  - 4.1.1.22.1. Coordinates the yearly EM and ESR projections with the Federal Highway Administration (FHWA) Division Offices. The FHWA provides supplemental expertise regarding conditions of roads. **(T-3)**
  - 4.1.1.22.2. Documents and forwards DAR deficiencies qualifying for Air Force funding assistance to AFGSC/A4C annually by 1 Sep. Include location (illustrate on a map), current condition (e.g. regarding poor surface/road bed condition, drainage problems, etc.), cost estimates, and comments justifying the requirements, and attach letter from the FHWA Division Office concurring with Air Force findings. **(T-2)**
  - 4.1.1.22.3. Processes and forwards to AFGSC/A4C projects that do not qualify as maintenance work as defined by FHWA (e.g., upgrade of roads for incorporation into the missile transporter route system) through an Access Road Needs Report. **(T-2)**
- 4.1.1.23. Selects alternate Transporter Erector (TE) routes and notifies appropriate agencies whenever designated roads become impassable or unsafe. **(T-3)**

- 4.1.1.23.1. Initiates EM requests if no approved alternate TE routes are available and the local agencies will not have the corrective action completed within an acceptable mission time frame. **(T-3)**
- 4.1.1.23.2. Considers TE route changes if alternate TE routes are required in the place of designated routes. **(T-3)**
- 4.1.1.24. Directs the FHWA to disburse funds for EM and ESR (does not apply to VAFB). NOTE: Each year the Air Force transfers a specific amount of money to the FHWA for maintenance of the TE/Missile TE route system. A portion of these funds is specifically identified for operational emergencies (e.g. EM and ESR). **(T-2)**
- 4.1.1.25. Evaluates proposed TE route changes in coordination with AFGSC/A4C, SDDC (Surface Deployment and Distribution Command), and FHWA Division Office, state highway department, and the applicable county officials. **(T-2)**
- 4.1.1.26. Evaluates grounds maintenance requirements and seasonal maintenance programs at LFs and MAFs. **(T-3)**
- 4.1.1.27. Ensures attendance of MEF at MXG maintenance forecast and schedule meetings. The MEF provides inputs to MXG Plans and Scheduling. **(T-3)**
- 4.1.1.28. Chief of Construction monitors all required contracts performed on MAFs and LFs and reports discrepancies to the Missile Engineer. **(T-3)**
- 4.1.1.28.1. Ensures inspectors are trained and qualified to meet the needs of contract efforts. **(T-3)**
- 4.1.1.28.2. Performs inspection, escort, and acceptance functions for contracts performed on missile facilities. Completes an AF Form 1477, *Construction Inspection Record*, each day of work during the contract period. **(T-3)**

## Chapter 5

### CIVIL ENGINEER OPERATIONS FLIGHT

#### 5.1. Responsibilities

##### 5.1.1. Operations Flight Chief

5.1.1.1. Ensures the effective use of available personnel to complete missile work orders, and ensures all assigned personnel supporting the missile complex have proper clearances and training to dispatch to LFs and MAFs. **(T-3)**

5.1.1.2. Effectively operate, maintain and repair Air Force facility and infrastructure assets classified as ICBM RP/RPIE, and to execute routine minor maintenance and critical, non-PDM major maintenance and sustainment of ICBM Infrastructure and equipment (IIE) designated as a BCE responsibility. **(T-2)**

5.1.1.3. Utilize common reporting tools and procedures to gather data, conduct analysis, and make decisions regarding operating, maintaining, and repairing ICBM RP/RPIE assets to maximize mission accomplishment and return on investment (ROI). **(T-2)**

5.1.1.4. Ensures all maintenance is performed IAW applicable AFIs, CEMs, and Technical Orders (TO). **(T-1)**

5.1.1.5. Ensures assigned personnel understand and comply with missile safety, weapon system safety rules, nuclear surety, and hardness requirements. **(T-1)**

5.1.1.6. Reviews requests for depot maintenance assistance and prepares appropriate recommendations to the MW/576 FLTS. **(T-3)**

5.1.1.7. Initiates all requests for welding and ensures welding operations are conducted IAW TO 21M-LGM30F-12. **(T-2)**

5.1.1.7.1. Ensures welders complete all specified nontechnical training requirements in **Table 3.1**, prior to performing welding tasks at missile facilities. **(T-3)**

5.1.1.8. Ensures the Operations Flight has a representative attend MXG/576 FLTS scheduling and status review meetings. **(T-3)**

5.1.1.9. Assists missile scheduling activities and resolves scheduling and supply problems. **(T-3)**

5.1.1.10. Informs MEF of IIE problems associated with Missile Maintenance Priority 1 - 4 discrepancies. **(T-2)**

5.1.1.11. Ensures Timeline Restrictions compliance

5.1.1.11.1. Military personnel who dispatch to the missile field must comply with timeline restrictions outlined in AFI 21-200\_AFGSCSUP, *Munitions and Missile Maintenance Management*.

5.1.1.11.2. Civilian personnel, who dispatch to the missile field, comply with timeline restrictions outlined in AFI 36-807, *Weekly and Daily Scheduling of Work and Holiday Observances*.

#### 5.1.1.12. Manages training program

5.1.1.12.1. Conduct a training program IAW AFI36-2651, *Air Force Training Program*, and ensure personnel dispatching to MAFs and LFs receive the required nontechnical training IAW **Table 3.1**.

5.1.1.12.2. Document training IAW local procedures. **(T-3)**

#### 5.1.1.13. Budgets for supplies and equipment for CE Material Control. **(T-3)**

5.1.1.14. Notifies MMOC when work stoppages are projected or detected. **(T-3)**

5.1.1.15. Prepares budget inputs for weapon systems parts, supplies and life extension work (including MCLs). **(T-3)**

### 5.2. Water Utilization

5.2.1. Maintain proper state water permits and certifications at LFs and MAFs. **(T-1)**

5.2.2. Maintain, review and analyze the Minuteman water utility operator logs. **(T-2)**

5.2.3. Maintain a copy of the water log and analysis in a historical file. **(T-2)**

### 5.3. CE Missile Work Control

#### 5.3.1. Missile Scheduling Responsibilities

5.3.1.1. Ensures priority maintenance requests for IIE are scheduled. **(T-2)**

5.3.1.2. Ensures DIFM and requests for missile support maintenance are received by missile scheduling. **(T-3)**

5.3.1.3. Combines lower priority work orders with higher priority maintenance. **(T-3)**

5.3.1.4. Coordinate with MXG/576 FLTS Plans and Scheduling to build IIE IMDS work packages. CE is responsible for building work packages for maintenance performed on IIE to meet weapon system requirements. **(T-3)**

5.3.1.5. Coordinates with the MXG/576 FLTS to ensure optimum planning, scheduling, and parts ordering. **(T-3)**

5.3.1.6. Ensures qualified personnel are available for emergency dispatch 24-hours a day. **(T-3)**

5.3.1.7. Schedules CE personnel to dispatch and work discrepancies with applicable MXG Sections when requested by Plans & Scheduling. **(T-3)**

5.3.1.8. Maintains reference documents to plan, schedule, and document equipment inspection, maintenance or repair. **(T-3)**

5.3.1.9. Provides In-service Work Plan inputs to the Chief of Operations. **(T-3)**

5.3.1.10. Generate TRIRIGA reports to debrief IIE maintenance Priorities 1-4 discrepancies within 12-hrs, or the next duty day in IMDS. IIE maintenance Priorities 5-9 discrepancies shall be debriefed within one week in IMDS. **(T-3)**

5.3.1.11. Use TRIRIGA to identify, schedule, track, and complete non-IIE RP/RPIE work orders to include CEM 21-SM80-6 inspections and complete briefing/debriefing actions. **(T-2)**



#### 5.4. IIE IMDS Operation

- 5.4.1. Obtain IMDS training from Maintenance Data Section. Contact Maintenance Data Section for assistance when problems occur with IMDS operation. **(T-3)**
- 5.4.2. Schedule and coordinate maintenance with MXG/576 FLTS on work to be completed. **(T-3)**
- 5.4.3. Use IMDS to identify, schedule, track, and complete work orders to include CEM 21-SM80-6 and 21M-LGM 30F-6 inspections and complete briefing/debriefing actions for IIE. **(T-2)**

#### 5.5. Maintenance Files

- 5.5.1. Coordinate with MXG/576 FLTS to ensure IMDS work orders are generated for one-time BCE request for assistance. Complete debriefing IAW paragraph [5.3.1.11](#). **(T-3)**
- 5.5.2. Document non-code able ICBM RPIE, missile field maintenance and in-shop missile maintenance support IAW local directives. **(T-3)**
- 5.5.3. Assign maintenance priorities to IIE work requirements IAW AFI21-202 Vol 1\_AFGSCSUP.
- 5.5.4. Document IIE work in IMDS using work unit code item or next higher assembly work per CEM 21-SM80-06. **(T-2)**
- 5.5.5. Assign missile maintenance priorities to all IIE work requirements IAW AFI21-202 Vol 1, [Attachment 2](#); [Table A2.1](#), [Table A2.2](#), and [Table A2.3](#).

#### 5.6. Maintenance File Reconciliation

- 5.6.1. Conduct a quarterly reconciliation of the IMDS for IIE discrepancy file listing with MXG/576 FLTS Maintenance Data Section, IAW AFI21-202 Vol 1 and local policies.
- 5.6.2. Reconcile TRIRIGA MAF discrepancies listings with Facility Managers. **(T-3)**
- 5.6.3. Reconcile IIE assist-request work orders with the MXG Plans and Scheduling Section/576 FLTS Briefing/Debriefing Element. **(T-3)**
- 5.6.4. Reconcile security discrepancies with MW security control/Security Forces Squadron or Central Security Control. **(T-3)**
- 5.6.5. Reconcile maintenance requirements awaiting parts with CE material control. **(T-3)**
- 5.6.6. Reconcile repairables with missile scheduling and DIFM monitor. **(T-3)**

#### 5.7. IIE Scheduling Procedures

- 5.7.1. Determine if an immediate dispatch is required upon receipt of a weapon system Priority 1 - 4 work requirement. NOTE: The Preventive Maintenance Program is a major planning factor for all maintenance activities. The underlying concept for the program is to prevent higher priority dispatches by “fine tuning” LF and MAF systems, and then leaving them alone unless a significant failure occurs (Priority 1 - 4). The critical elements of this program are careful, long-range planning and strict adherence to established preventive maintenance schedules. Close scheduling coordination with the MXG/576 FLTS Plans and Scheduling Section is essential to ensure BCE support of this program. **(T-3)**

5.7.2. Control and document parts cannibalizations IAW TO 00-20-2.

### **5.8. Maintenance Forecasts and Schedules**

5.8.1. Provide inputs to MXG/576 FLTS Plans and Scheduling Section. (T-2)

5.8.2. Provide long range forecast to MXG/576 FLTS Plans and Scheduling Section. (T-2)

5.8.3. Attend the weekly scheduling meeting to coordinate missile work requirements, including those items identified by the long-range forecast. (T-3)

5.8.4. Provide a copy of the weekly schedule to MXG/576 FLTS Plans and Scheduling Section. (T-3)

5.8.5. Annotate deviations to the schedule for re-accomplishment at a later date. (T-3)

5.8.6. Obtain copies of the maintenance forecasts from MXG/576 FLTS Plans and Scheduling Section. (T-2)

5.8.7. Contact MMOC/Plans and Scheduling with scheduling deviations to the daily final schedule. (T-2)

### **5.9. Dispatching Personnel**

5.9.1. Comply with MW/576 FLTS procedures during an Operational Readiness Inspection/Local Operational Readiness Inspection. (T-2)

5.9.2. Brief/debrief with MMOC and Missile Crew as required. The BCE task supervisor will complete the work package, clearing corrected and invalid discrepancies. (T-2)

### **5.10. Welding**

5.10.1. The BCE is responsible for the safe accomplishment of welding tasks IAW TO 21M-LGM30G-12.

5.10.2. The CE missile scheduling and MXG/576 FLTS Plans and Scheduling Section will jointly decide on a time and date to complete welding work orders. (T-3)

### **5.11. Base-Level Supply Support (CE Material Control)**

5.11.1. Responsibilities RP/RPIE

5.11.1.1. Manages and maintains supply requests. (T-2)

5.11.1.2. Obtains repaired parts and supplies. (T-2)

5.11.1.3. Processes repairable assets. (T-3)

5.11.1.4. Provides an interface between the BCE complex and base supply (T-3)

5.11.2. Responsibilities IIE

5.11.2.1. Provides an interface between the BCE complex, base supply, and missile wing material control/576 FLTS material control. (T-3)

### **5.12. Material Requests**

5.12.1. CE requests all supplies necessary to complete work orders accomplished by BCE organizations IAW AFMAN23-122, *Matériel Management Procedures*, and AFI32-1001.

5.12.2. MXG/576 FLTS Material Control requests supplies when BCE personnel assist the MXG/576 FLTS. (T-2)

### **5.13. DIFM**

5.13.1. Manage the DIFM and maintenance turnaround programs as outlined in AFMAN23-122.

5.13.2. Process DIFM items and update documentation as required. (T-3)

### **5.14. Repairable Status**

5.14.1. Develop and maintain a repairable status tracking system. (T-3)

5.14.2. Include but do not necessarily limit repairable status to the following:

5.14.2.1. IIE asset Nomenclature. (T-3)

5.14.2.2. The unit asset (include date received by BCE). (T-3)

5.14.2.3. AFTO Form 350 number. (T-2)

5.14.2.4. Status – IAW AFH 23-12 V2PT1\_AFGSCUP, example awaiting Maintenance (AWM), AWP, etc. (if AWP, include Estimated Date of Delivery). (T-3)

### **5.15. Contract Operated Civil Engineer Supply Store (COCESS)**

5.15.1. Items purchased through COCESS will be charged to the purchasing organization. (T-3)

5.15.2. If COCESS cannot meet the required delivery date on emergency RP/RPIE work requirements, submit a purchase request to base procurement for action in accordance with the COCESS contract. These provisions, in general terms, permit the government to reserve the right to procure items from other sources if the contractor cannot meet emergency time frames. (T-3)

5.15.3. Process materials/parts required for installation of a low priority through COCESS. (T-3)

5.15.4. Establish material control requirements IAW AFI32-1001.

5.15.5. Process items not in the COCESS contract or not eligible for COCESS support through base supply. (T-3)

### **5.16. Equipment Authorization Inventory Data (EAID)**

5.16.1. Remove ICBM RPIE items identified as EAID property from the ICBM RP records and ensure the ICBM RPIE items are identified in the appropriate ICBM RPIE account. (T-3)

5.16.2. Establish tools, equipment and vehicle requirements IAW AFMAN23-122.

5.16.3. FM Self-Help Support. Establish local procedures between the BCE and MW/OG for performing minor maintenance/repair not justifying BCE dispatches. (T-3)

## Chapter 6

### MODIFICATION MANAGEMENT

#### 6.1. Central Engineering Control (CEC) for ICBM Facility Modifications

6.1.1. Proposed modifications to ICBM RP/RPIE are subject to command-level CEC when such modifications affect the operation of ICBM support equipment or impact weapon system safety, survivability, and vulnerability, or interface with security systems or modify essential utility service. **(T-2)**

6.1.2. As-built drawings must be updated and forwarded to AFGSC/A4C and AFNWC/NIH on all projects. **(T-2)**

6.1.3. Request assistance from AFGSC/A4C and/or AFNWC/NIH in determining if a CEC modification is required.

6.1.4. Submit proposed modifications requiring CEC to AFGSC/A4C and AFNWC/NIH. **(T-2)**

6.1.5. Sole source purchasing authority is granted to all items listed in CEMs and technical requirement documents where the item has been tested or qualified for nuclear hardness, or where it is controlled as part of the weapon system. The AFGSC/A4C and AFNWC/NIH will validate/document all sole source requirements for all ICBM IIE and RP/RPIE modifications to maintain hardness and configuration control. **(T-2)**

#### 6.2. Equipment/Component Substitutes

6.2.1. The Chief Missile Engineer identifies the substitution of functionally identical equipment or components regardless of manufacturer or model designation. Suitable substitutes must meet design specifications, tolerances, and satisfy original form, fit, function, and hardness criteria. The AFGSC/A4C and AFNWC/NIH is the final approval authority for equipment/component substitutes and determines compliance with hardness criteria and nuclear surety requirements. Items identified by the Chief Missile Engineer may be temporarily installed and used/operated with ADP authorization until the applicable CEMs are changed. Disapproved temporarily installed equipment/components will be removed after AFGSC/A4C and AFNWC/NIH develop a suitable substitute or recommendation. **(T-2)**

6.2.1.1. Forward all manufacturer brochures/manuals containing component specifications, drawings, operating instructions, and maintenance instructions pertaining to checkout, troubleshooting, and adjustment to AFGSC/A4C and AFNWC/NIH. **(T-2)**

6.2.2. The MW/576 FLTS or CE material control requests substitute actions to Base Missile Engineering by letter and MEF forwards an informational copy to AFGSC/A4C and AFNWC/NIH. Requests may be made by telephone/E-mail but must be followed up with a letter within 5 working days. The flight letter, coupled with a manufacturer's brochure, will be considered an ADP to authorize interim use of the suitable substitute part. Prepare an AFGSC Form 272 identifying the substitute part and forward within 30 days of installation. **(T-2)**

#### 6.3. Advance Data Package (ADP)

6.3.1. Base Missile Engineers authorize and control use of ADPs intended for use by the Technical Engineering Section and technicians that are qualified on the original equipment. **(T-3)**

6.3.2. Only AFGSC/A4C and AFNWC/NIH or the Base Missile Engineer Flight can issue or authorize an ADP change. **(T-3)**

6.3.3. Review and file ADPs. **(T-3)**

6.3.4. Forward a copy of each locally generated ADP to AFGSC/A4C and AFNWC/NIH. **(T-3)**

#### **6.4. Facility Change Initiation Request (FCIR)**

6.4.1. A FCIR initiates the modification process for ICBM IIE and RP/RPIE requiring CEC.

6.4.2. Review FCIRs for applicability, safety compliance, hardness, environmental impact, technical accuracy, and compatibility with other MWs/Group. FCIR, which could prevent personnel injury or damage to equipment, will be classified as an Immediate FCIR and processed within 48 hours. **(T-3)**

6.4.3. Assign Project Manager, coordinate with local agencies, and document and file FCIRs. **(T-3)**

6.4.4. Request approval from AFGSC/A4C and AFNWC/NIH and maintain a perpetual FCIR disposition log. **(T-3)**

6.4.5. Review and respond to FCIRs, initial technical review, and Final Technical Reviews (FTR) received from AFGSC/A4C and AFNWC/NIH. **(T-3)**

6.4.6. Develop, plan, and assign time periods. Order parts and collect data. Prepare final documentation. **(T-3)**

#### **6.5. Facility Engineering Analysis Test (FEAT)**

6.5.1. A FEAT authorizes a test for obtaining reliability, operation, or other research data to determine feasibility and need for modification or procedure.

6.5.2. A FEAT may be initiated during the FCIR process or independently. A FEAT may be requested by any agency. If the FEAT is being requested by a field unit, the FEAT request and supporting documents are submitted through the local Missile Engineer to AFGSC/A4C and AFNWC/NIH. The local Missile Engineer performs logging and filing requirements, processes the FEAT request through local organizations for review and approval, and forwards the completed FEAT request and any supporting documents to AFGSC/A4C and AFNWC/NIH. **(T-3)**

6.5.3. An approved FEAT request results in a requirement to develop a FEAT Plan (FP). The FP may be developed within AFGSC/A4C and AFNWC/NIH or assigned to a base. Because of its nature, the format for an FP is not specific except for a Facility Test Identification Placard that is prominently displayed on sites where the test is being performed. **(T-3)**

6.5.4. The AFGSC/A4C and AFNWC/NIH processes information collected during the FP into the FTR and makes disposition recommendations for MFAP consideration. The FCIR and FP may be closed out or approved for development into a local work order, MCL, or contract as appropriate. **(T-3)**

## 6.6. Maintenance Change Log (MCL)

### 6.6.1. Types of MCLs

6.6.1.1. Record CEM MCL: Record MCLs are necessary for tracking of ICBM IIE and RP/RPIE modifications requiring CEC that are being accomplished under a contract or means other than an MCL. Record MCLs identify the modification being performed and the affected facilities, systems, equipment, drawings, and technical data; but, Record MCLs do not provide detailed modification procedures. **Note:** For IIE MCLs and IIE record MCLs, notify MXG/576 FLTS Plans and Scheduling Section to upload the MCL information in the TCTO portion of IMDS for each site affected by the MCL.

6.6.1.2. CEM MCL: The CEM MCLs are instructions for accomplishing modifications. Unlike a Record MCL, a CEM MCL is complete within itself. The CEM MCLs contain comprehensive supply data lists and modification instructions. **Note:** For IIE MCLs and IIE record MCLs, notify MXG/576 FLTS Plans and Scheduling Section to upload the MCL information in the TCTO portion of IMDS for each site affected by the MCL.

## 6.7. MCL Completion Package Preparation

6.7.1. Submit technical data deficiencies to AFGSC/A4C and AFNWC/NIH upon completion of the first site. **(T-3)**

6.7.2. Submit completion package within 60 days after contract completion. **(T-2)** A single completion package may be used for all MCLs included in the same contract. Include the following in completion packages:

6.7.2.1. Date final site was completed.

6.7.2.2. Reproducible electronic operational as-built drawings.

6.7.2.3. Shop drawings, if any.

6.7.2.4. Local tracking number for all AFGSC forms initiated and technical data affected, and dates forms were submitted to AFGSC/A4C and AFNWC/NIH.

6.7.2.5. Any engineering data and/or findings that were used in the accomplishment of the MCL.

6.7.2.6. One original set of vendor's/manufacturer's brochures.

6.7.3. Notify AFGSC/A4C and AFNWC/NIH of any delays in processing the completion package and request an extension a minimum of 30 days prior to the rescission date from AFGSC/A4C and AFNWC/NIH. **(T-2)**

## Chapter 7

### CIVIL ENGINEER MANUALS

#### 7.1. Program

##### 7.1.1. Responsibilities

7.1.1.1. AFGSC/A4C and AFNWC/NIH develops and issues equipment manuals, system manuals, interim technical data (CEMIC and ADPs), and MCLs IAW AFI33-360, Publications and Forms Management, Civil Engineer Manual Program.

7.1.1.2. The AFGSC/A4C and AFNWC/NIH issues and approves CEM pen and pencil entries. **(T-2)**

7.1.1.3. AFNWC/NIH will publish a CEM Index bi-annually, as a minimum. **(T-2)**

##### 7.1.2. Title, Purpose, and Intended Users

7.1.2.1. CEMs constitute the official medium for disseminating technical information, instructions, and safety procedures to personnel assigned to organizations responsible for the operation and maintenance of the systems identified in the purpose statement.

7.1.2.2. AFNWC/NIH is developing the process to separate and later manage IIE items pulled from current CEMs and turned into Technical Orders (T.O.s). AFGSC/ A4C will assume responsibility for remaining CEMs that address ICBM RP/RPIE.

##### 7.1.3. Subject Matter

7.1.3.1. The basic type of subject matter included in CEMs is essential descriptive, operating, and maintenance information required for ICBM systems and other systems requiring specialized data.

##### 7.1.4. Format

7.1.4.1. The CEM equipment and system manuals shall be prepared in the format specified by local directives.

##### 7.1.5. Numbering, Revising, and Indexing

7.1.5.1. CEMs will be numbered, changed, revised, supplemented, and indexed IAW the CEM Index, AFGSCI 32-1005, *ICBM Real Property/Real Property Installed Equipment Responsibilities*; TO 00-5-1, *AF Technical Order System*; and MIL-STD 38784, *DoD Standard Practice for Manuals, Technical: General Style and Format Requirements*. CEMs will be reviewed annually IAW current publication management policies.

##### 7.1.6. Distribution and Requisition

7.1.6.1. Restricted releasability publications (formally referred to as Distribution X) – Stocked and issued by the OPR. Established and requested copies by letter, electronic mail, facsimile, or telephone to HQ AFGSC AFGSC/A4C, 841 Fairchild Ave, Bldg 5541 Barksdale AFB LA, 71110, [AFGSCA4CWorkflow@us.af.mil](mailto:AFGSCA4CWorkflow@us.af.mil), FAX: (318)456-9899 ATTN: AFGSC/A4CP, Phone DSN:781-0732/2426. **(T-2)**

7.1.6.2. Local reproduction is not authorized. Requisition copies IAW para above. **(T-1)**

#### 7.1.7. Record Sets

7.1.7.1. AFNWC/NIH shall establish and maintain the official CEM record sets. AFGSC/A4C shall established and maintained the CEM record set as they are transferred to AFNWC/NIH. **(T-2)**

#### 7.1.8. Security Classification Guidance

7.1.8.1. Security provisions of DoDI 5200.1, *DoD Information Security Program*, shall be observed during all phases of CEM preparation, development, processing, printing, and distribution.

#### 7.1.9. Maintenance of Libraries

7.1.9.1. Maintain CEM libraries IAW TO 00-5-1, Air Force RDS which may be found on-line at <https://afirms.amc.af.mil>, and AFGSC 32-1005, *ICBM Real Property/Real Property Installed Equipment Responsibilities*.

#### 7.1.10. Maintenance of CEM Libraries

7.1.10.1. Maintain CEM libraries using criteria outlined in TO 00-5-1, AF Technical Order System, for TO libraries and this instruction.

7.1.10.2. The AFGSC/A4C and AFNWC/NIH maintains the master CEM library, CEM publication processes and printing, and related publications. **(T-2)**

#### 7.1.11. One-Time Technical Data

7.1.11.1. The Base Missile Engineer develops one-time technical data when mission requirements, not specifically covered in CEMs, do not warrant an official CEM change. Tasks requiring immediate accomplishment, affecting only one-site or occurring one-time qualify and require the following:

7.1.11.1.1. Approval signatures of the MXG/576 FLTS Commander and the BCE or their designated representative. **(T-2)**

7.1.11.1.2. Approval from AFGSC/A4C and AFNWC/NIH when the procedure conflicts with existing procedures. **(T-2)**

7.1.11.1.3. Forward a copy of the approved data to AFGSC/A4C and AFNWC/NIH. **(T-2)**

7.1.11.1.4. For IIE an Engineering Technical Assistance Request (ETARs) form shall submitted to AFNWC/NIH **(T-2)**

#### 7.1.12. Improvement Reports (IIE and RP/RPIE)

7.1.12.1. Limit CEM changes to those essential for weapon system reliability, safety and protection of personnel and equipment. Do not make changes to CEMs to temporarily bypass system components. Use AFGSC Form 272, RPIE Improvement Report, to initiate a CEM change request.

7.1.12.2. Use of ICBM RPIE Improvement Reports:

7.1.12.2.1. Update modifications to missile facilities and equipment, descriptions, illustrations, and replacement of equipment or components and improvements required for EWO procedures and safety of personnel/equipment. **(T-2)**



- 7.1.12.2.2. Improve clarity or completeness of operation maintenance instructions and to correct errors to existing data. **(T-2)**
- 7.1.12.3. Initiate all CEM ICBM RPIE Improvement Reports affecting substitute equipment items.
- 7.1.12.3.1. If new vendor's/manufacturer's brochures are required for equipment manuals, procure one copy (unmarked originals only, suitable as master copies for reproduction) and submit as attachments. **(T-2)**
- 7.1.12.3.2. Provide the following information, as applicable:
- 7.1.12.3.2.1. Component specifications **(T-2)**
  - 7.1.12.3.2.2. Installation and removal instructions **(T-2)**
  - 7.1.12.3.2.3. Operating instructions **(T-2)**
  - 7.1.12.3.2.4. Maintenance instructions (to include checkout, troubleshooting, calibration, adjustment, servicing, lubrication and inspection instruction) **(T-2)**
  - 7.1.12.3.2.5. Illustrated parts breakdown and parts list **(T-2)**
  - 7.1.12.3.2.6. Associated electrical diagram/schematics and flow diagrams/schematics **(T-2)**
- 7.1.12.4. CEM improvements may be initiated by anyone. **(T-2)**
- 7.1.12.5. Forward BCE initiated AFGSC Form 272 to the MXG for review and coordination. The MXG QA ensures the review and coordination of AFGSC Form 272 and returns it to the Base MEF within 7 days of receipt. **(T-2)**
- 7.1.12.6. Changes to the Facility Manager Manual (CEM 21-SM80-19 series) are reviewed and coordinated by MW/OG. Operations Group Standard Evaluation Facility Manager ensures the review and coordination of AFGSC Form 272. **(T-2)**
- 7.1.12.7. The CEM changes requiring use of special tools and equipment will be accompanied by sufficient information and supporting data. **(T-2)**
- 7.1.12.8. The AFGSC/A4C and AFNWC/NIH will notify originator and MEF of approval/disapproval action using AFGSC Form 272-1, Improvement Report Reply. **(T-2)**
- 7.1.12.9. Include sufficient supporting data for changes to CEM 21-SM80-06, Work Unit Code Manual. **(T-2)**

### **7.1.13. Emergency Improvement Reports**

- 7.1.13.1. Submit AFGSC Form 272 for emergency changes to CEMs, by expedient means, to correct deficiencies which could result in fatal or serious injury to personnel, extensive damage/destruction of equipment, violation of federal, state, or local regulations, or inability to achieve/maintain operational capability. Include all supporting information normally included in AFGSC Form 272. Informational copies are sent to HQ AFGSC/A4B (Missile Maintenance Division), HQ AFGSC/A3I (Missile Operations Branch) for CEM 21-SM80-19 changes only, AFGSC/IGISL (Maintenance Inspection Branch), 20 AF/A4 (Missile Maintenance TO Library/Technical Data Section) by

AFGSC/A4C and AFNWC/NIH. The 20 AF/A4 forwards duplicate copies of AFTO Form 22, Technical Manual (TM) Change Recommendation and Reply, on ICBM RPIE data in TOs to AFGSC/A4C and AFNWC/NIH with comments/recommendations. **(T-2)**

7.1.13.2. The AFGSC/A4C and AFNWC/NIH replies to Emergency Improvement Reports using AFGSC Form 272-1 within 48 hours. Initial reply will be by electronic message. When conditions dictate a longer period than 30 days, AFGSC/A4C and AFNWC/NIH will notify field units of expected distribution date. If emergency changes are also required on related CEMs/TOs, units will take immediate action to submit additional improvement reports. **(T-2)**

7.1.13.3. The AFGSC/A4C and AFNWC/NIH notifies the originator and Base MEF of any disapproved AFGSC Form 272 by using AFGSC Form 272-1. **(T-2)**

#### **7.1.14. Civil Engineering Manual Interim Changes (CEMICs)**

7.1.14.1. Report CEMIC deficiencies using an AFGSC Form 272.

7.1.14.2. The AFGSC/A4C and AFNWC/NIH issues a CEMIC or control number to authorize the local publication of a CEMIC if the requested change is urgent. **(T-2)**

7.1.14.3. The CEMICs developed by the Base MEF will be in the same format as CEMICs developed by AFGSC/A4C and AFNWC/NIH observing security provisions outlined in DoDI5200.1, DOD Information Security Program and Protection of Sensitive Compartmented Information.

7.1.14.4. The MXG/576 FLTS Commander and the BCE or their deputy are the final releasing authorities for local CEMICs. **(T-2)**

7.1.14.5. Local CEMIC and CEM Interim Change Notice (CICN) pages are published on green paper. AFGSC/A4C and AFNWC/NIH MCL CEMICs and CICN pages are published on yellow paper. Post changes IAW the CICN. **(T-2)**

7.1.14.6. Each page will have the CEMIC number, volume number (where applicable), and page number. The CEMIC number is a four-digit control number issued by AFGSC/A4C and AFNWC/NIH (i.e., CEMIC 21-SM80B- 2-21-2V1-0555). **(T-2)**

7.1.14.7. Distribute copies of CEMICs to all the account holders of the affected CEM. Send electronic/hard copies of each local CEMIC to AFGSC/A4C and AFNWC/NIH, one copy to HQ AFGSC/A3I, CEM 21-SM80-19 changes only and one copy to 20 AF/A4. **(T-2)**

7.1.14.8. File the new CEM Interim Change Notice (CICN) page in front of the current CICN page. File CICN pages in numerical order with the CICN page containing the highest CEMIC four-digit control number (Block 4) filed on top. NOTE: CEMIC numbers may have cycled (i.e., consider 0017 higher than 7876 for posting purposes). **(T-2)**

## **7.2. BCE CEM Libraries**

### **7.2.1. Responsibilities**

7.2.1.1. Establish and maintain a CEM master library (MEF) and a working library for use by the BCE operations flight. **(T-2)**

7.2.1.2. Co-located libraries need only maintain one set of applicable methods and procedures, TOs, applicable management publications, and AFTO Forms 110, Technical Order/CPIN Distribution Record. **(T-2)**

7.2.1.3. The CEM libraries must include the following:

7.2.1.3.1. Applicable CEMs, CEM changes, CEMICs, CEMIC changes, and supplements. **(T-2)**

7.2.1.3.2. Applicable methods and procedures TOs (00 series) or have web access to electronic TOs. **(T-2)**

7.2.1.3.3. TO 21M-LGM30G-12 **(T-2)**

7.2.1.3.4. Applicable TO 21M-LGM30G-2-10, Launch Facility and Support Building Procedures. **(T-2)**

7.2.1.3.5. Applicable weapon system TOs to include corrosion and calibration TOs and others as required and approved by the missile engineer. **(T-2)**

7.2.1.3.6. Index of Civil Engineer Manuals **(T-2)**

7.2.1.3.7. AFGSCI32-1005, ICBM Real Property/Real Property Installed Equipment Responsibilities. **(T-2)**

7.2.1.3.8. AFI21-202 Vol 1, Missile Maintenance Management **(T-2)**

7.2.1.3.9. Applicable 21-SM80-19 CEMs **(T-2)**

7.2.1.4. File CEM changes IAW procedures prescribed for TO changes in TO 00-5-1

7.2.2. CEM Requisitions/Requirements

7.2.2.1. Submit CEM requisitions and requirements to AFGSC/A4C and AFNWC/NIH. **(T-2)**

## Chapter 8

### FLOOD/SNOW CONTROL

#### 8.1. Responsibilities (BCE)

- 8.1.1. Support MW flood control plan (T-2)
- 8.1.2. Identify flood prevention actions IAW O-Plan (T-2)

#### 8.2. Snow Control

- 8.2.1. Preposition snow removal vehicles at the MAFs throughout the winter season to remove snow. (T-3)
- 8.2.2. Remove snow from the MAF areas as soon as possible after a storm to permit access to the site by operations, contractor and maintenance personnel IAW the MW snow removal plan. (T-3)
- 8.2.3. Remove snow from the launch facility to provide access for maintenance/contractor personnel or security campers. **Note:** To avert damage, motorized snow equipment will not come within three feet of the Improved Missile Physical Security System (IMPSS) antenna. Snow within a 3-foot radius of the antenna will be removed by hand shovel. (T-3)
- 8.2.4. The MXG and BCE develops a local plan to familiarize snow removal equipment operators with launch facility topography. As a minimum, include location of launcher closure door gear rack and tracks, IMPSS security antenna, sump pump discharge line, and diesel fuel tank fill pipe. (T-3)
- 8.2.5. All personnel shall notify MXG or BCE of site drainage problems (e.g. obstructed drainage culverts, heavily silted ditches, obstructed man-proof barriers, ice/snow dams in ditches, etc.), and take corrective measures within their capability and refer any other requirements to the BCE for resolution. (T-3)

**Chapter 9**

**DEFENSE AND SITE ACCESS ROADS**

**9.1. Defense Access Roads (DAR) Responsibilities**

9.1.1. Maintenance responsibility for public missile roads belongs to the agency that owns it (e.g. township, county, state, etc.).

9.1.2. Maintenance of roadways with Air Force funds is limited to gravel approved designated DAR TE roads, see [Attachment 1](#), Terms, for more details.

9.1.3. Report all missile road deficiencies to the Missile Engineering Flight (MEF). **(T-2)**

**9.2. Extraordinary Maintenance (EM)**

9.2.1. MEF representative will select approved alternate TE routes and notify AFGSC/A4C and AFNWC/NIH and appropriate agencies whenever designated roads become impassable or unsafe. **(T-2)**

9.2.2. MEF representative will initiate EM requests if no approved alternate TE routes are available and the local agencies will not have the corrective action completed within an acceptable time frame. **(T-2)**

9.2.3. MEF representative will request EM funding to upgrade alternate TE routes to standards acceptable for movement of TE vehicle due to national security interests. All requests will be filed in writing at Chief Missile Engineer. **(T-2)**

**9.3. Emergency Snow Removal (ESR)**

9.3.1. Make arrangements for ESR routine maintenance, if within 72 hours after termination of storm conditions, there is no indication that roads will be opened within a 5-day time frame. **(T-2)**

9.3.2. Request ESR at any time to ensure snow removal is accomplished within 24 hours after termination of snowfall for crew changeovers at MAFs and for Priority 1 or 2 requirements that develop during the snowstorm. Priorities 1 and 2 are defined in [Table 9.1](#). **(T-2)**

9.3.3. Process ESR requests through the appropriate agency. ESR request must be approved by MEF or officially designated representative. **(T-2)**

9.3.4. Request sanding services only for Payload Transporter (PT)/TE movements. Use ESR criteria for these services. NOTE: Snow removal on local roads is the responsibility of the owning agency. The counties normally do not plow roads where remote sites are located if residents have other means of access. **(T-2)**

**Table 9.1. Priority Designators for ESR**

PRIORITY	APPLICATION

1	<p>Repair of critical equipment for safe operation of the weapon system.</p> <p>Maintenance actions required to prevent damage or further damage to the weapon system, avoid injury to personnel, or render the weapon safe.</p> <p>To enable Security Forces to clear and re-secure/guard (e.g., camper) LFs displaying both outer and inner zone alarms that will not reset.</p>
2	<p>Maintenance required to place MAFs on alert or return to alert.</p> <p>Maintenance required to retain or return sorties to EWO status.</p> <p>When a known compliance discrepancy exist which could result in a violation of federal, state, or local regulation or Air Force/base instructions.</p>

#### 9.4. TE Route Changes

9.4.1. Consider TE route changes if alternate routes are required in the place of designated routes. **(T-2)**

9.4.2. Justify proposed changes to Military Surface Deployment and Distribution Command (SDDC) through AFGSC/A4C and AFNWC/NIH, if any combinations of the following apply:

9.4.2.1. Significantly shorter travel time identified.

9.4.2.2. Elimination of deficient or questionable bridges.

9.4.2.3. Improved or safer routes identified.

9.4.2.4. Former gravel road change to an all-weather surface.

9.4.2.5. Anticipated reduction in EM or ESR (including sanding).

9.4.2.6. Provides for improved physical security for TE vehicle during program that provides

9.4.3. Include economic and engineering justification to proposed routes that require upgrading. **(T-2)**

9.4.4. Route changes shall be coordinated through all relevant local, county, state, and FHWA agencies prior to submission to AFGSC/A4C and AFNWC/NIH. Coordination can be formal (written) or E-mail. **(T-2)**

9.4.5. The expenditure of Air Force funds on public roads is legal only if SDDC certifies that the roads are important to national defense (Title 23, United States Code, Section 210a).

9.4.6. Proposed routes that have all-weather paved surfaces must be capable of supporting loaded TE axle loads without damage to the roadway. **(T-2)**

9.4.6.1. The system does not require an all-weather paved surface, and such routes are not eligible for route maintenance funds.

9.4.6.2. Local government officials will be advised of this and recognize that the Air Force will not participate in resurfacing all-weather paved routes.

9.4.6.3. If local government officials propose highway or paving projects, which will result in a substantial savings to the Air Force, the Air Force may participate to the extent that necessary re-graveling projects will not be required.

## **9.5. Planning of Missile Movements**

9.5.1. Review MXG missile movement plan prior to missile movement. **(T-2)**

9.5.2. Prior to use of an approved route:

9.5.2.1. The TE driver and Chief Missile Engineer or their designated engineer/technician familiar with the operating characteristics of the TE will confer and review pre-movement requirements. **(T-2)**

9.5.2.2. Perform a TE route survey using an AFGSC Form 65. **(T-2)**

9.5.2.3. The survey will be signed by the Engineer/Designated Representative TE driver, and Convoy Commander. **(T-2)**

9.5.3. Roadbeds will be clearly marked with stakes, flags, or other means, if hazardous areas exist. **(T-2)**

9.5.4. Convoy Commander, or designated representative, will be on foot at hazardous areas or intersections to aid the driver through the turn or away from the hazard. **(T-2)**

9.5.5. Super elevation shall be evaluated on the 14 foot wide center portion of the roadway, not the worst case portion of the roadway. If the road can support a loaded TE and still meet the 14 foot width and super elevation, although outside the "road center", this shall be evaluated. **(T-2)**

## **9.6. TE Route Maintenance Standards**

9.6.1. Re-gravel inadequate routes with sufficient gravel and binder to ensure satisfactory service for a minimum of 6 years for approved TE routes. **(T-2)**

9.6.2. The Chief Missile Engineer, or his designated representative, will survey primary routes annually. **(T-2)**

9.6.2.1. The designated representative will be knowledgeable of:

9.6.2.1.1. Road Construction standards. **(T-2)**

9.6.2.1.2. The driving characteristics of the TE. **(T-2)**

9.6.2.2. The route survey will:

9.6.2.2.1. Determine road conditions. **(T-2)**

9.6.2.2.2. Identify each deficient segment of the route on Annual Unsurfaced Road Inspection Sheet. **(T-2)**

9.6.3. The Chief Missile Engineer will coordinate the TE movement schedule with MXG Plans and Scheduling Section and prepare a prioritized list of road repairs. The prioritized list will be forwarded to AFGSC/A4C and AFNWC/NIH, NLT 1 September each year. **(T-2)**

9.6.4. TE route

9.6.4.1. Provide a minimum 18-foot roadway, with a minimum 2-foot shoulder. Roadway width is measured from gravel/grass edge to gravel/grass edge and includes shoulders. **(T-2)**

9.6.4.2. Provide a minimum road load bearing width for TE. Width shall be measured from centerline of road 7 feet each way for a minimum load bearing width of 14-feet. **(T-2)**

9.6.4.3. Gravel may be added over the full width of an existing roadway up to 24-feet. If it is necessary to raise the grade on roadways over 18-feet wide, the existing roadway width shall be maintained. A shoulder width of 2-feet is required. **(T-2)**

9.6.4.4. Ensure a minimum turning radius of 60-feet is available for use by the TE. For design purposes during road reconstruction or rebuilding 75-feet is recommended. Super elevation of curves and cross slope of roads will not exceed 10%. **(T-2)**

9.6.4.5. Maintain a minimum 4% crown grade. **(T-2)**

9.6.4.6. Cut and fill sections will be addressed during road reconstruction or rebuilding to the maximum extent possible. If the Chief Missile Engineer deems the cut and fill road sections to be unsafe for TE travel, it shall be addressed in the pre-movement and annual surveys. **(T-2)**

9.6.4.7. Maintain 12% maximum, less than 8% desired vertical grade. If maximum grade exceeds 12%, but is less than 14% road shall be considered hazardous. **(T-2)**

**9.7. Bridge and Culverts Criteria**

9.7.1. Use appropriate county, state, or federal guidance to determine adequacy of existing bridges and culverts on TE routes to missile sites. **(T-2)**



## Chapter 10

### MAINTENANCE OF MISSILE STRUCTURES AND TOPOGRAPHY GROUNDS

#### 10.1. Responsibilities (BCE)

10.1.1. Manage missile site structures and grounds to maintain technical facilities and equipment as well as effective control of erosion and drainage. **(T-2)**

10.1.2. Retain and maintain only those above ground structures that were specifically designed and constructed as integral and essential features of the missile facility. **(T-2)**

#### 10.2. Grounds

10.2.1. Maintain missile site grounds within the security fence to a degree commensurate with the classification of semi-improved grounds, IAW DoD5210.41-M AFMAN31-108, (S) Nuclear Weapon Security Manual (U), except where individual out leases prescribe other maintenance criteria.

10.2.2. Ensure vegetation within the fenced enclosure of the LF/MAF and sewage lagoons does not exceed a height of 8 inches and ensure there is no vegetation growing on the service area. Herbicides should not be used immediately adjacent to the lagoons. **(T-2)**

10.2.3. Maintain topography within the IMPSS surveillance area IAW TO 21M-LGM30G-2-10.

10.2.4. The configuration of the site fence/gate gaps should be IAW Ref AFI 31-101, as-built drawings, and IMPSS standard (i.e., gaps shall not exceed 2-inches).

10.2.5. Ensure vegetation on helipads does not exceed a height of 8-inches. **(T-2)**

10.2.6. The BCE provides equipment and operators support for extensive excavation in support of cable repair, modification, or relocation beyond the communications unit's capability. **(T-2)**

10.2.7. Accomplish vegetation control and clearance as necessary to facilitate cable repairs, ensure cable hardness, and prevent security compromise. NOTE: Land owners and tenants who construct fences across government right-of-way will be held responsible for providing reasonable access to the easement for patrolling and maintaining the cables. **(T-2)**

#### 10.3. Structures

10.3.1. Use protective coatings in missile facilities IAW applicable instructions.

10.3.2. Install and maintain signs required by applicable instructions.

10.3.3. Provide site identification signs at each LF and MAF. **(T-3)**

## Chapter 11

### LOGS AND RECORDS

#### 11.1. Responsibilities

11.1.1. The BCEs, MEFs, Operations Flights, and Maintenance Groups are responsible for properly preparing and maintaining applicable forms and logs for assigned IIE and RP/RPIE systems in accordance with governing instructions (AFIs, Technical Data, and Manufacturer's Data). (T-2)

#### 11.2. Missile Site Power Generation Logs and Historical Records

11.2.1. The shop responsible for performing diesel generator maintenance (i.e. MMXS, Power Production, Contractors) prepares/maintains an AF Form 719, Historical Record Diesel Electric Generator and System, and other applicable forms IAW AFI32-1062. Any forms not listed in [Attachment 1](#) must be approved by AFGSC/A4C. (T-2)

11.2.2. Removed power units will have an AF IMT 719 attached to the unit for historical reference. (T-2)

11.2.3. Record hour meter readings of the last oil change on the AF Form 719. Compare stop hour meter reading from the last diesel run. If more than 200 hours have accumulated since the last lube oil and filter element change, change oil and filter. (T-2)

11.2.4. Diesel records are cradle to grave documents and must be maintained for the life-cycle of the unit. (T-2)

STEVEN P. BRUNTS, GS-15, DAF  
Executive Director, Logistics, Engineering  
and Force Protection

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

DODI 5200.1, *DoD Information Security Program*

MIL-STD 38784, *DoD Standard Practice for Manuals, Technical: General Style and Format Requirements*

TO 00-5-1, *AF Technical Order System*

CEM Index, *Index of Civil Engineer Manuals*

AFGSCI 32-1005, *ICBM Real Property/Real Property Installed Equipment Responsibilities*

***Prescribed Forms***

AFGSC Form 286, Facility Change Initiation Requests

AFGSC Form 287, Facility Engineering Analysis Test (FEAT) Request

AFGSC Form 272, RPIE Improvement Reports

AFGSC Form 272-1, Improvement Report Reply

AFGSC Form 65, Transporter-Erector Pre-movement Route Survey

***Adopted Forms***

AF Form 3510, Automatic Transfer Switch Inspection/Maintenance Report

AF Form 1477, Construction Inspection Record

AF Form 1445, Materials and Equipment List

AF Form 719, Historical Record Diesel Electric Generator and System

AF Form 487, Emergency Generator Operating Log (Inspection Testing)

AF Form 332, Base Civil Engineer Work Request

AF Form 327, Base Civil Engineer Work Order

AFTO Form 350, Repairable Item Processing Tag

AFTO Form 110, Technical Order/CPIN Distribution Record

AFTO Form 22, Technical Manual (TM) Change Recommendation and Reply

***Abbreviations and Acronyms***

**ACES**—Automated Civil Engineering System

**ADP**—Advance Data Package

**AFI**—Air Force Instruction

**AFGSC**—Air Force Global Strike Command

**AFGSCI**—Air Force Global Strike Command Instruction  
**AFTO**—Air Force Technical Order  
**AWM**—Awaiting Maintenance  
**AWP**—Awaiting Parts  
**BCE**—Base Civil Engineer  
**CE**—Civil Engineer  
**CEC**—Central Engineering Control  
**CEM**—Civil Engineer Manual  
**CEMIC**—Civil Engineer Manual Interim Change  
**CES**—Civil Engineer Squadron  
**CICN**—CEM Interim Change Notice  
**COCESS**—Contract Operated Civil Engineering Supply Store  
**CSI**—Construction, Surveillance and Inspection  
**DIFM**—Due In For Maintenance  
**DoD**—Department of Defense  
**EAID**—Equipment Authorization Inventory Data  
**EM**—Extraordinary Maintenance  
**ETAR**—Engineering Technical Assistance Request  
**ESR**—Extraordinary Snow Removal  
**EWO**—Emergency War Order  
**FCIR**—Facility Change Initiation Request  
**FEAT**—Facility Engineering Analysis Test  
**FHWA**—Federal Highway Administration  
**FM**—Facility Manager  
**GCVW**—Gross Commercial Vehicle Weight  
**HQ**—Headquarters  
**IAW**—In Accordance With  
**ICBM**—Intercontinental Ballistic Missile  
**IDEA**—Innovative Development through Employee Awareness  
**IIE**—ICBM Infrastructure and Equipment  
**IMDS**—Integrated Maintenance Data System  
**IMPSS**—Improved Missile Physical Security System

**LEAP**—Life-Extension Assessment Program  
**LF**—Launch Facility  
**LoSS**—Life of System Storage  
**MAF**—Missile Alert Facility  
**MCL**—Master Change Log  
**MEEDS**—Missile Electronic Encryption Device System  
**MEF**—Missile Engineer Flight  
**MES**—Missile Engineer Squadron  
**MFAP**—Missile Facility Alteration Panel  
**MMOC**—Missile Maintenance Operations Center  
**MXG**—Maintenance Group  
**MW**—Missile Wing  
**NCO**—Noncommissioned Officer  
**OPR**—Office of Primary Responsibility  
**OG**—Operations Group  
**PDM**—Post Depot Maintenance  
**PT**—Payload Transporter  
**QA**—Quality Assurance  
**RP**—Real Property  
**RPIE**—Real Property Installed Equipment  
**SAV**—Staff Assistance Visit  
**SDDC**—Surface Deployment and Distribution Command  
**TCTO**—Time Compliance Technical Order  
**TE**—Transporter Erector  
**TO**—Technical Order

### *Terms*

**Advanced Data Packages (ADPs)**—The ADPs provide support for operation and maintenance of components and subsystems during modification programs, during evaluation of authorized suitable substitute items, and to provide specialized technical data coverage for maintenance tasks. These documents consist of federal data or commercial vendor data, and may contain such information as operation, repair, maintenance instructions, and parts lists. The ADPs may also consist of existing hard copy CEM pages, which have required changes incorporated with pen, pencil, and typed matter entries.

**Central Engineering Control (CEC)**—The purpose of CEC is for control of facility configuration to ensure system operation, security, safety, and survivability.

**Civil Engineer Manuals (CEMs)**—The official medium for disseminating technical information, instructions, and safety procedures to personnel assigned to the organizations responsible for the operation and maintenance of ICBM RP/RPIE weapon system equipment.

**Civil Engineer Manual Interim Change (CEMIC)**—Maintenance instructions in CEMs that are available during modification programs while awaiting formal publication of approved changes. Typically, CEMICs are used when lack of data or existing data could result in injury to personnel or damage to equipment. CEMICs may be published locally after coordination with MES.

**Construction, Surveillance, and Inspection (CSI)**—Process by which life-extension projects are monitored at ICBM facilities.

**Code able**—Equipment items which are listed in CEM 21-SM80-06, Work Unit Code manual.

**Contracts**—A life-extension contract is an MES or base generated project that is beyond the organic repair capability of the Base Missile Engineering function.

**Defense Access Roads**—Program that provides a means for the Federal Government to pay its fair share of the cost for repairs and re-graveling to unimproved missile routes to ensure their continued ability to support the missile transporter-erector (TE) vehicle. This program is required due to the TE size and weight (no other missile vehicle mandates the DAR program). Program is managed by Military Traffic Management Command and is the liaison to Federal Highway Administration. See AR55-80/AFMAN 32-1017 for additional guidance.

**Equipment Manuals**—Equipment manuals are bound, numbered volumes of commercial and federal data pertaining to end items of equipment and individual components.

**Extraordinary Maintenance (EM)**—Maintenance requested by Air Force and performed by local agencies on a certified missile transporter gravel route in excess of that required for normal public travel. Alternate route systems are not eligible for EM unless the primary route cannot be used at the time of the transporter movement. The EM program enables Base Missile Engineering to correct day- to-day discrepancies that would otherwise interrupt high priority or emergency operations. It provides for emergency repairs, which cannot wait for scheduled maintenance to be performed by the owning agency.

**Extraordinary Snow Removal (ESR)**—A contract established through the FHWA to assist local agencies through use of supplemental resources. The ESR program is used to ensure the security of the facility, prevent extensive equipment damage, reduce off alert time, and to protect the health and safety of Air Force personnel.

**Facility Change Initiation Request (FCIR)**—An FCIR is used to propose a modification to ICBM RP/RPIE. An AFGSC Form 286, Facility Change Initiation Request, is used to submit a FCIR.

**Facility Engineering Analysis Test (FEAT)**—A FEAT is performed to test and verify a proposed change to the configuration controlled portion of ICBM RP/RPIE. FEATs will originate from FCIRs, suggestions, or need for suitable substitutes. An AFGSC Form 287, Facility Engineering Analysis Test (FEAT) Request, is used to submit a FEAT.

**Integrated Maintenance Data System (IMDS)**—A weapon system computer system used to schedule and track Missile work orders. The IMDS work orders will be used in Civil Engineering to record maintenance actions involving one-time BCE assists, 21-SM80-6 inspections, and maintenance actions taken to support 21-SM80-6 inspections, MCL/FEAT work, and code able and non-code able equipment repair.

**Improved Missile Physical Security System (IMPSS)**—Security system at ICBM launch facilities.

**ICBM Infrastructure and Equipment (IIE)**—IIE is used to describe the former ICBM RP/RPIE.

**Interim Technical Data**—Interim technical data is used to operate and maintain systems or equipment during modifications programs.

**Master Change Log (MCL)**—Instructions for accomplishing modifications to CEC equipment. The MCLs are published by MES. The MCLs are numbered and contain supply data and modification instructions. The last four digits of the MCL coincide with the MCL control number assigned by MES.

**Real Property (RP)**—Lands, buildings, structures, utilities systems, improvements, and appurtenances thereto. Includes equipment attached to and made part of buildings and structures (such as heating systems) but not movable equipment (such as plant equipment).

**System Manuals**—System manuals are bound and numbered volumes of technical data pertaining to operation and maintenance of entire systems.

**Transporter-Erector Route**—A road specifically designated for use by the TE vehicle for access to missile sites.

## Attachment 2

**REAL PROPERTY INSTALLED EQUIPMENT AND ICBM INTERGRATED  
EQUIPMENT LISTING**

**Table A2.1. Launch Facility Malmstrom, Minot, FE Warren, Vandenberg**

<b>SYSTEM</b>	<b>RP/RPIE</b>	<b>IIE</b>	<b>Cat I, II, III</b>
120 v Power Receptacles-inside Support Bldg.		<b>X</b>	<b>II</b>
Access Door/Bolts (Barn Door)		<b>X</b>	<b>II</b>
Access Road	<b>X</b>		<b>III</b>
Agilent Test Equipment (support equipment)		<b>X</b>	<b>II</b>
Antisiphon Valve		<b>X</b>	<b>I</b>
Automatic Switching Unit (ASU)		<b>X</b>	<b>I</b>
Automatic Transfer Switch		<b>X</b>	<b>I</b>
Battery Disconnect Switch		<b>X</b>	<b>I</b>
Bollards	<b>X</b>		<b>III</b>
Brine Line		<b>X</b>	<b>I</b>
Brine Line rupture disk/flex coupling (Should be	<b>X</b>		<b>I</b>
Buck Boost Transformer		<b>X</b>	<b>I</b>
Cables		<b>X</b>	<b>I</b>
Cathodic Protection system	<b>X</b>		<b>III</b>
Cattle Guards	<b>X</b>		<b>III</b>
Collimator Bench at Vandenberg		<b>X</b>	<b>I</b>
Commercial Lighting and Power Receptacles		<b>X</b>	<b>III</b>
Concrete	<b>X</b>		<b>III</b>
Concrete Pads	<b>X</b>		<b>III</b>
Concrete Structure	<b>X</b>		<b>I</b>
Concrete Structure (Support Bldg.)	<b>X</b>		<b>I</b>
Conduit--Brine Line (Underground)		<b>X</b>	<b>I</b>
Conduit--Brine line (Between LSB and LER)	<b>X</b>		<b>II</b>
Control Panel SP102		<b>X</b>	<b>I</b>
Control Panel SP103		<b>X</b>	<b>I</b>
Control Panel SP104,SP105		<b>X</b>	<b>I</b>



Control Panel, Dewatering Well		<b>X</b>	<b>I</b>
CTLI Rack		<b>X</b>	<b>I</b>
Culverts	<b>X</b>		<b>III</b>
Damper D-15 (radiator bypass)		<b>X</b>	<b>I</b>
Damper D-16 (radiator face)		<b>X</b>	<b>I</b>
Day Tank TK104		<b>X</b>	<b>I</b>
DEU Batteries		<b>X</b>	<b>I</b>
DEU Battery Charger		<b>X</b>	<b>I</b>
DEU Load Test Cell		<b>X</b>	<b>I</b>
Dewatering Well		<b>X</b>	<b>I</b>
Diesel Electric Unit (DEU)		<b>X</b>	<b>I</b>
Diesel Exhaust Pipe		<b>X</b>	<b>I</b>
Drain Pipes, Brackets and Tubes		<b>X</b>	<b>I</b>
Electric Service Disconnects	<b>X</b>		<b>I</b>
Electric service lines and conduit	<b>X</b>		<b>III</b>
Electric Unit Heater EUH1		<b>X</b>	<b>II</b>
Electric Unit Heater EUH3		<b>X</b>	<b>II</b>
Electric Utility Meters	<b>X</b>		<b>III</b>
Electromagnetic Shielding Gasket		<b>X</b>	<b>I</b>
EMI Filter		<b>X</b>	<b>I</b>
EMI/RFI Seal		<b>X</b>	<b>I</b>
ESA Room Conduit, and Grounding Plates		<b>X</b>	<b>I</b>
ESA Room Walls, Door & Gasket		<b>X</b>	<b>I</b>
Exhaust Duct Work -- Diesel		<b>X</b>	<b>I</b>
Exhaust Shaft Ladder and Grate		<b>X</b>	<b>II</b>
Facility EMI Filter		<b>X</b>	<b>I</b>
Fences & Gate	<b>X</b>		<b>II</b>
Flexible Duct (radiator)		<b>X</b>	<b>I</b>
Floodlight	<b>X</b>		<b>II</b>
Floor Suspended		<b>X</b>	<b>I</b>
Fuel Conservation Vent		<b>X</b>	<b>I</b>

Fuel Hoses		<b>X</b>	<b>I</b>
Fuel Leak Detection Monitor		<b>X</b>	<b>I</b>
Fuel Overfill Alarm		<b>X</b>	<b>I</b>
Fuel Overfill Alarm Acknowledge Assembly		<b>X</b>	<b>I</b>
Fuel Tank Interstitial Sensor		<b>X</b>	<b>I</b>
Fuel Tank Sump Sensor		<b>X</b>	<b>I</b>
Fuel Tank TK101	<b>X</b>		<b>I</b>
Fuel Transfer Pump P101		<b>X</b>	<b>I</b>
Gate Valve		<b>X</b>	<b>I</b>
Grounding Points and lines	<b>X</b>		<b>I</b>
Grounding System	<b>X</b>		<b>I</b>
Hand Winch		<b>X</b>	<b>I</b>
Heat Tape for Discharge Lines	<b>X</b>		<b>II</b>
HICS Gates	<b>X</b>		<b>III</b>
High Pressure Line/Valve		<b>X</b>	<b>I</b>
Hinge Pins/Platform/Bolts		<b>X</b>	<b>II</b>
Ice Scraper, LCD Snow Plow		<b>X</b>	<b>II</b>
IMPSS Pull Box		<b>X</b>	<b>II</b>
Included All Conduit, Wiring & Piping Associated With Components For Control Distribution--Inside Building		<b>X</b>	<b>I</b>
Included All Conduit, Wiring & Piping Associated With Components For Power Distribution--Outside Building	<b>X</b>		<b>III</b>
Intake Shaft		<b>X</b>	<b>II</b>
Intake Shaft Insect Screen		<b>X</b>	<b>II</b>
Ladder		<b>X</b>	<b>II</b>
Launch Tube C Rail		<b>X</b>	<b>II</b>
Launch Tube Expansion Joint		<b>X</b>	<b>II</b>
Launch Tube Heater Duct		<b>X</b>	<b>I</b>
Launch tube Liner		<b>X</b>	<b>I</b>
Launcher Closure Door		<b>X</b>	<b>I</b>
Launcher Closure Door suppression Vandenberg		<b>X</b>	<b>II</b>
LCD EMI, RFI Shielding, debris bins, bulb seal		<b>X</b>	<b>I</b>

LCD Rails		X	II
LCD Wheel Assembly		X	II
LER Liner		X	I
LER Water Floor Sensor		X	I
LER 2 Ladder and Hand Rail		X	II
Lights		X	II
Limit Switch		X	II
Load Center		X	I
LSB Access Covers (Lid) 2 Each		X	II
LSB Access Door/Hatch		X	II
Lube Oil Tank		X	I
Magnetic Switch, Hatch/Launcher Closure		X	I
Make up Air Lines (Supply/Return)	X		II
Make-up Air Lines (Underground)		X	II
Manholes	X		III
Manual Fuel Transfer Pump P107		X	I
MIIDS		X	I
MPP		X	I
PAH Light/Lenses		X	II
Piping between TK101 an TK104		X	I
Piping between TK104 and DEU		X	I
PLPA		X	I
Plug Valve		X	I
Portable DEU		X	I
Power Panel LDB		X	I
Power Panels		X	I
Primary Power Filter Assembly		X	I
PSVB		X	I
Quarts Iodine Floodlight (Inside Fence)	X		III
Rattlespace Sensor (Wing I)		X	I
Receptacle		X	I

RFI Gasket		X	I
RFI Load Filter		X	I
RSU		X	I
Safety Switch		X	II
Spring Isolators		X	I
SREMP ESA--Source Region Electromagnetic Pulse Electrical Surge Arrestor		X	I
Standby Power Circuit Breaker		X	I
Structural Steel Floor--Welded		X	II
Sump Pump SP102		X	I
Sump Pump SP103		X	I
Sump Pump SP104, SP105		X	I
T-Box Launch Tube Water Diverters		X	I
TE Pylon footers	X		II
TE Pylons		X	II
Topography	X		III
Vapor tight Light Fixture		X	II
Vehicle Pad	X		III
Water Diverter System		X	I
Weather Vane	X		III
Weatherproof Receptacle		X	II
Weatherproof Receptacles/conduit		X	I
Work Cage Isolation Transformer		X	I
Work Cage Motor Limit Switch		X	I
Work Cage Safety Switch		X	I
Y-Type Strainer		X	I

**Table A2.2. Missile Alert Facility Malmstrom AFB**

<b>SYSTEM</b>	<b>RP/RPIE</b>	<b>IIIE</b>	<b>Cat I, II, III</b>
Aboveground Storage Tank GOV Issue Diesel and Gas	X		II
Air Conditioners	X		III
Air Register	X		II

Anchor system for Kitchen Equipment		X	III
Battery Disconnect Switch		X	I
Boiler B101	X		II
Buildings/Garages	X		III
Cable Air Dryer		X	I
Capsule Acoustical Enclosure Walls and walk way		X	III
Carpet		X	III
Cathodics	X		III
Circulating Pumps P102 & P103	X		II
Concrete Structure	X		III
Convectors	X		II
Copper Grounding Plate and studs		X	II
Corrosion Protection	X		III
Crash Barrier	X		III
Curtains		X	II
Deaerator	X		II
DEU Interface Panel		X	I
Dewatering Wells	X		II
Diesel Dispensing Unit	X		II
Diesel Electric Unit (DEU)		X	I
Diesel Exhaust Pipe		X	I
Distribution Panel		X	I
Draft Control Damper	X		II
Electric Door Lock		X	II
Electric Service Disconnects	X		I
Electric service lines and conduit	X		II
Electric Utility Meters	X		III
Electrical Surge Arrester Cabinet		X	I
Elevator		X	II
Elevator Shaft Concrete	X		III
Emergency Escape Ladder		X	II

EMI Shielding Gasket		<b>X</b>	<b>I</b>
Enclosure Walls, Clean Room		<b>X</b>	<b>II</b>
ESA Room Conduit		<b>X</b>	<b>I</b>
ESA Room Walls		<b>X</b>	<b>II</b>
Escape tunnel and hatch	<b>X</b>		<b>III</b>
ESV 102 , EVS 103, ESV 104		<b>X</b>	<b>II</b>
Exhaust fan--PRV 101	<b>X</b>		<b>II</b>
Exit Light Circuit Breaker	<b>X</b>		<b>II</b>
Expansion tank TK105	<b>X</b>		<b>II</b>
Fan S101	<b>X</b>		<b>II</b>
Fencing	<b>X</b>		<b>III</b>
Fire Alarm Monitor Panel	<b>X</b>		<b>II</b>
Fire Horn/Strobe	<b>X</b>		<b>II</b>
Fire Horn/Strobe		<b>X</b>	<b>II</b>
Fire Hose Cabinet	<b>X</b>		<b>II</b>
Fire Suppression System	<b>X</b>		<b>II</b>
Flood Light Contactor	<b>X</b>		<b>III</b>
Fuel Tank Emergency Disconnects and alarms	<b>X</b>		<b>II</b>
Fuel Tank TK107	<b>X</b>		<b>II</b>
Gasoline Dispensing Unit	<b>X</b>		<b>II</b>
Grease Traps	<b>X</b>		<b>II</b>
Grounding Points and lines	<b>X</b>		<b>III</b>
Heaters EUH2A & EUH2B	<b>X</b>		<b>II</b>
Helo-Pad and access roads	<b>X</b>		<b>III</b>
HICS Drain line		<b>X</b>	<b>I</b>
Hose Bibbs	<b>X</b>		<b>II</b>
Hydraulic Panel		<b>X</b>	<b>I</b>
Hydro pneumatic Tank TK109A	<b>X</b>		<b>II</b>
Included All Conduit Associated With Components For Power Distribution	<b>X</b>		<b>III</b>
Included All Conduit, Wiring & Piping Associated With Components For Direct WS Support		<b>X</b>	<b>I</b>

Distribution--Inside Building			
Included All Conduit, Wiring & Piping Associated With Components For Utilities Distribution--Inside Building	<b>X</b>		<b>II</b>
Included All Conduit, Wiring & Piping Associated With Components For Utilities Distribution--Inside Building		<b>X</b>	<b>I</b>
Included All Conduit, Wiring & Piping Associated With Components For Utilities Distribution--Outside Building	<b>X</b>		<b>III</b>
Intake and Exhaust Shafts		<b>X</b>	<b>I</b>
Intake and exhaust Shafts including top hats or shaft intake cover	<b>X</b>		<b>III</b>
Lagoons	<b>X</b>		<b>II</b>
Lavatory		<b>X</b>	<b>II</b>
LCC Emergency chilled water storage tank		<b>X</b>	<b>I</b>
LCDB Distribution Panel		<b>X</b>	<b>I</b>
Lighting		<b>X</b>	<b>II</b>
Lighting and Power Receptacles	<b>X</b>		<b>III</b>
Lighting and Power Receptacles Mission Support		<b>X</b>	<b>II</b>
Lighting Panel	<b>X</b>		<b>II</b>
Lightning Arrestors		<b>X</b>	<b>II</b>
Manholes	<b>X</b>		<b>III</b>
MIIDS System--Missile Interior Intrusion Detection System		<b>X</b>	<b>I</b>
Modular Bed Storage Unit		<b>X</b>	<b>II</b>
Multi-Media Depth Filter	<b>X</b>		<b>II</b>
Oil-Fired Furnace	<b>X</b>		<b>II</b>
Overhead Doors	<b>X</b>		<b>II</b>
Pavements	<b>X</b>		<b>III</b>
PLPA--Power Line Protection Assembly		<b>X</b>	<b>I</b>
Polarized Receptacle Top Side	<b>X</b>		<b>III</b>
Polarized Receptacle LCC		<b>X</b>	<b>II</b>

Portable Water System Panel	X		II
Post Carbon Filter	X		II
Power Command Control Panel		X	I
Power Roof Ventilation	X		II
Power Transfer Switch (PTS) Cabinet		X	I
Pre-Carbon Filter Tank	X		II
PTS/DEU Batteries		X	I
PTS/DEU Battery Charger		X	I
Pump Motors P102 & P103	X		II
Pushbutton Station	X		II
Radiator Damper Actuator		X	I
Radio Tower Foundation	X		III
Radio Towers and Lights		X	II
Reverse Osmosis Unit	X		II
RFI Filter		X	I
Safety Barrier Gate		X	II
Security Alarm Cabinet	X		II
Security Monitor Panel	X		II
Septic Tanks	X		II
Service Disconnect Breaker	X		II
Sewage (SP101)		X	II
Sewage Lift Stations	X		II
Sewer	X		II
Sewer lines	X		II
Signal Processor Unit		X	I
SP101 Control Panel		X	II
Standby Power Circuit Breaker		X	I
Steel Walls/Liner		X	I
Storage Tank Pumps	X		II
Suspended capsule structure		X	III
Tank TK 121	X		II



Tank TK 122	X		II
Tank TK 123	X		II
Tank TK 124	X		II
Thermostats	X		II
TK 108 Level Transducer		X	II
Ultrasonic Motion Sensor		X	I
Valves, 3 Way Mixing and Pressure Regulating	X		II
Valves, Check-sewage and Gate-Water		X	II
Ventilation Supply Fan		X	I
Vertical Gate	X		II
Water Heater WH103		X	III
Water Softener	X		II
Water Storage Tank TK 108		X	II
Water Unit Heater UH1 & UH2	X		II
Weather Station disconnect hookup	X		III
Weatherproof Receptacle		X	III
Well Level Monitor Panel	X		II
Well Pump Controller Panel	X		II
Wells	X		II

**Table A2.3. Missile Alert Facility FE Warren & Minot AFBs**

SYSTEM	RP/RPIE	IIE	Cat I, II, III
18,000 BTU Heat Pump	X		II
49,000 BTU Heat Pump	X		II
9,000 BTU Heat Pump	X		II
9120HF Smoke Detector	X		II
Abandoned HF antenna base(HICS) underground Facilities	X		III
Adsorption System	X		II
AES Intake and Exhaust Shafts/ductwork		X	I
Air Compressor	X		II
Air Conditioners	X		II

Air Cylinder		X	II
Air Entrainment System Ductwork		X	I
Anchor system for Kitchen Equipment		X	III
AST GOV Issue Diesel and Gas Tanks	X		II
Audio-Visual FA Alarms	X		II
Automatic Switching Unit (ASU)		X	I
Ball Foot Valve		X	III
Baseboard Heater	X		II
Blast Door Hydraulic Pumping Unit		X	I
Blower Coil unit	X		II
Brine System		X	I
Buck Boost Transformer		X	I
Buildings/Garages	X		III
Cable Air Dryer		X	I
Capsule Acoustical Enclosure Walls		X	II
Carbon Filters	X		II
Carpet		X	III
Carpet where applicable		X	III
Cathodics	X		III
Check valve		X	II
Check Valve--Water		X	II
Chlorine Feeder	X		II
Circulating Pump P1 and P2	X		II
Commercial Lighting and Power Receptacles (LCEB)		X	II
Concrete	X		III
Concrete Structure	X		II
Condensing Unit	X		II
Control damper D-3	X		II
Control panel	X		II
Control Panel P110	X		II
Copper Grounding Plate and studs		X	I

Corrosion Protection	X		III
Crash Barrier	X		II
Curtain		X	III
Damper D-118		X	I
Damper D-119		X	I
Day Tank		X	II
Day Tank--Diesel Fuel		X	I
Depth Filter	X		II
DEU Batteries		X	I
DEU Battery Charger		X	I
DEU Exhaust System	X		I
Dewatering Well	X		II
Diaphragm Tank, Fire Suppression System	X		III
Diesel Electric Unit (DEU) ( Topside)	X		I
Diesel Electric Unit (DEU) (LCEB)		X	I
Diesel Exhaust Pipe		X	I
Disconnect Switch	X		I
Drive Machine		X	II
Electric Boiler	X		II
Electric Door Lock		X	II
Electric Service Disconnects	X		I
Electric service lines and conduit	X		I
Electric Unit Heater	X		II
Electric Utility Meters	X		III
Electrical Surge Arrester Cabinet		X	I
Elevator		X	II
Elevator Car		X	II
Elevator Control Panel		X	II
Elevator Drive Panel		X	II
Elevator Governor		X	II
Elevator Shaft Concrete	X		II

Emergency Escape Ladder		X	II
Emergency Recovery ventilator	X		II
Emergency Ventilation Shutoff switch	X		II
EMI Shielding Gasket		X	I
Energy Management Control System	X		III
Engine Control panel	X		I
Engine Cranking/Monitor/Alarm panel		X	I
Engine Instrument Panel	X		I
ESA Room Conduit		X	II
ESA Room Walls		X	II
Escape tunnel and hatch	X		III
ESV 102 , EVS 103, ESV 104		X	II
Evaporator	X		II
Exhaust fan	X		II
Exhaust fan-bathroom		X	III
Exterior Lighting	X		III
FA Control Panel	X		II
FA Pull Stations	X		II
FA System Battery meter	X		II
Fencing	X		II
Filter F101	X		II
Fire Alarm (FA) Control Panel	X		II
Fire Alarm Panel		X	II
Fire Alarm Pull Station		X	II
Fire Hydrant	X		II
Fire Suppression for Kitchen	X		II
Fire Suppression System	X		II
Floor System		X	I
Fuel lines		X	I
Fuel Tank Emergency Disconnects and alarms	X		II
Gas regulator	X		II

Gas Shutoff valve	X		II
Gas-Fired Furnace	X		II
Gate Valve (Topside)	X		II
Gate Valve (LCC)		X	III
Gate Valve (LCEB)		X	II
Generator Control panel (LCEB)	X		I
Generator Control Panel (Topside)		X	I
Gravity damper D-1	X		II
Grease Interceptor	X		II
Grease Traps	X		II
Grounding Points and lines		X	III
GSHP Wells	X		II
Heat Detectors	X		II
Helo Pad and access roads	X		III
HICS Drain line		X	I
Hostway gate		X	II
Hydraulic Accumulator		X	II
Hydro pneumatic Tank	X		II
Hydronic Heater	X		II
Included All Conduit, Wiring & Piping Associated With Components For Direct Ws Support Distribution--Inside Building		X	I
Included All Conduit, Wiring & Piping Associated With Components For Utilities Distribution--Inside Building	X		II
Included All Conduit, Wiring & Piping Associated With Components For Utilities Distribution--Inside Building		X	I
Included All Conduit, Wiring & Piping Associated With Components For Utilities Distribution--Outside Building	X		II
Included All Conduit, Wiring & Piping Associated With Components For Utilities Distribution--Outside Building	X		III
Included All conduit & Piping Associated With Components	X		III
Intake and exhaust Shafts to include top hats or shaft intake cover		X	III

lagoons	X		II
Lavatory		X	III
LCC Emergency chilled water storage tank		X	I
LCEB Enclosure Walls, Clean Room		X	II
Leak Detection Monitor Panel		X	II
Level Controller	X		III
Lighting		X	II
Lighting		X	III
Lighting Panels	X		I
Linear Diffuser	X		II
Lube Oil tank TK117		X	I
Manholes	X		III
Manual FA pull	X		II
MIIDS System--Missile Interior Intrusion Detection System		X	I
Modular Bed Storage Unit		X	II
Motor Damper D-2	X		II
Oil-Fired Furnace	X		II
Oil-Fired Furnace	X		II
Overflow Sewage Tank		X	II
Overhead Doors	X		II
Pavements	X		n/a
PH System	X		II
Pilot Control Relay	X		II
Platform Support Springs		X	II
PLPA		X	I
Power Panel (LCEB)		X	I
Power Panels (Topside)	X		I
Power System Alarm and Control Panel	X		I
Pre-Filters	X		II
Pressure Gages	X		II
Pump Control Panel C1	X		

Pump P110	X		II
Radio Tower Foundation	X		III
Radio Towers and Lights (missile support equipment)		X	II
Retiring Cam		X	II
Reverse Osmosis Unit	X		II
Roof Exhaust Fan	X		II
Rural water Timer WT104	X		III
Safety Barrier Gate		X	II
Salt Tank	X		II
Sand Separator	X		III
Security Monitor Panel (Topside)	X		II
Security Monitor Panel (LCEB)	X		I
Sensor	X		II
Septic Tanks	X		II
Sewage Hose		X	II
Sewage Lift Stations- Concrete, ref MAF 1 for details	X		II
Sewage Pit	X		II
Sewage Pump Control Panel SP101		X	II
Sewage Pump SP101		X	II
Seward	X		II
Sewer lines	X		II
Sewer Vent Fan		X	III
Shock Attenuators		X	I
Shock Attenuators--Water		X	II
Signal Processor Unit		X	I
Slack Cable Device		X	II
Smoke Detectors	X		II
Soda Ash System	X		II
SREMP ESA		X	I
Stand-by Circuit Breaker	X		I
Steel Cable		X	II

Steel Walls/Liner (LCC)		<b>X</b>	<b>I</b>
Storage Tank Pumps	<b>X</b>		
Storage Tank TK107 Fuel	<b>X</b>		<b>I</b>
Storage Tank TK115	<b>X</b>		<b>II</b>
Storage Tank TK118	<b>X</b>		<b>II</b>
Storage Tank TK123	<b>X</b>		
Storage Tank Water		<b>X</b>	<b>II</b>
Suspended capsule structure and walk way		<b>X</b>	<b>III</b>
Tank TK110	<b>X</b>		<b>II</b>
Tank TK111A & TK111B	<b>X</b>		<b>II</b>
Thermal Detectors	<b>X</b>		<b>II</b>
Thermostat	<b>X</b>		<b>II</b>
Ultrasonic Motion Sensor		<b>X</b>	<b>I</b>
Valves, 3 Way Mixing and Pressure Regulating	<b>X</b>		<b>II</b>
Ventilation Supply Fan		<b>X</b>	<b>I</b>
Vertical Gate	<b>X</b>		<b>II</b>
Water Conditioner	<b>X</b>		<b>II</b>
Water Heater (Topside)	<b>X</b>		<b>II</b>
Water Heater (LCC)		<b>X</b>	<b>II</b>
Water Softener	<b>X</b>		<b>II</b>
Water Storage Tank Pumps	<b>X</b>		<b>III</b>
Water Storage Tank TK 108	<b>X</b>		<b>III</b>
Water Storage Tank WTK103	<b>X</b>		<b>III</b>
Water tank WTK101	<b>X</b>		<b>II</b>
Water Treatment Panel WCP-1	<b>X</b>		<b>III</b>
Weather Station disconnect hookup	<b>X</b>		<b>III</b>
Wells	<b>X</b>		<b>III</b>