

**BY ORDER OF THE COMMANDER  
6TH AIR MOBILITY WING**

**MACDILL AIR FORCE BASE  
INSTRUCTION 32-107**

**7 JANUARY 2003**

**Civil Engineer**



**CIVIL ENGINEER SUPPORT OF CRITICAL  
OPERATIONAL FACILITIES**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

---

**NOTICE:** This publication is available digitally on the AFDPO WWW site at:  
<http://www.e-publishing.af.mil>

---

OPR: 6 CES/CEO (Mr Becker)  
Supersedes MACDI 32-107, 21 August 1995

Certified by: 6 CES/CC (Lt Col Foti)  
Pages: 6  
Distribution: F

---

The purpose of this instruction is to establish procedures for Civil Engineer support of critical operational facilities.

***SUMMARY OF REVISIONS***

Deleted para **2.1.**; changed “diesel powered units rated up to and including 200 Kilowatts (kw)” to “diesel engine driven generators sets”; “one hour at least once per month” to “one continuous hour after reaching operating temperature once per month”; and “15 minutes once every two weeks” to “30 minutes once every month” (para **5.1.1.1.**); added “annually” after load bank (para **5.1.1.2.**); added “At critical facilities, the test switch on the automatic transfer panel will be used to start the generator and initiate the transfer of power. This will prevent the interruption of power to the facility.” (para **5.1.1.3.**); changed “(6 CES/CEOIG)” to “(CEOP)”; changed sentence to read “Maintenance and repair will be accomplished with a degree of urgency warranted a critical facility” to “Maintenance and repair will be accomplished with a degree of urgency warranted with the using agency Force Activity Designator code”; and deleted last sentence (para **5.1.2.1.**); changed CES/CEOIG to CEOP (para **5.1.2.2.**); changed “Bench Stock and Special Level” to “CE forward store and Special Level”; changed “is mandatory” to “is recommended” (para **5.1.3.**); deleted para **5.1.3.1.** through 5.1.3.5.; added new para **5.1.3.1.**; changed “6 CES/CEOIG will develop and post at each critical facility a check sheet including items to be inspected on the respective systems” to “6 CES/CEOP will provide a Recurring Work Program (RWP) inspection check sheet including items to be inspected on the respective systems for all critical facilities” (para **5.1.4.3.**); changed “CES/CEOIG” to “CES/CEOP” (para **5.1.4.4.**); changed “The commander (6 CES/CC)” to “The civil engineer commander (6 CES/CC)”; “Headquarters, Air Combat Command, Civil Engineer Squadron, Utilities Operations Section (HQ ACC/CES/ESO), DSN 574-9434, ext 4335, with information relative to electrical outages as outlined in ACC Sup 1 to AFI 32-1063” to “HQ AMC/CEO with information relative to electrical outages”; deleted remainder of paragraph (para **5.1.6.**); changed “CES/CEOI” to “CES/CEOP”; changed “one copy is returned to the requesting organization Commander, and the remaining copy is placed in the vicinity of or readily available to the equipment for which training was provided” to

“one copy is placed in the vicinity of, or readily available to the equipment for which training was provided” (para 5.2.2.). A bar (|) indicates a change since the last edition.

**1. Applicability.** This instruction applies to all 6th Civil Engineer Squadron (6 CES) personnel who operate and maintain utility subsystems and equipment in support of critical base facilities, and to all base agencies using these facilities.

**2. References.**

- 2.1. AFJMAN 32-1082, *Facilities Engineering, Electrical Exterior Facilities*.
- 2.2. AFI 32-1062, *Electrical Power Plants and Generators*.
- 2.3. AFI 32-1063, *Electric Power Systems*.

**3. General.** This instruction is to ensure that 6 CES personnel and using agencies are aware:

- 3.1. Of the importance of maintaining uninterrupted services in support of critical facilities.
- 3.2. That plants and systems must be operated and maintained in an efficient and reliable condition at all times.
- 3.3. That the loss and/or degradation of essential mission capabilities, equipment, injuries and/or facilities must be minimized.

**4. Scope.** Critical facilities are listed in [Attachment 2](#).

**5. Responsibilities.**

5.1. The following procedures will be the responsibility of the 6 CES:

5.1.1. Standby generator operating procedures:

5.1.1.1. Real Property Installed Equipment (RPIE) diesel engine driven generator sets will be exercised for one continuous hour after reaching operating temperature once per month. Gasoline powered generator sets will be operated for 30 minutes once every month.

5.1.1.2. Equipment Authorization Inventory Data generators not under facility load will be exercised annually using a load bank. Annually, the unit must be connected and tested on the facility or system for which it directly supports.

5.1.1.3. RPIE generator sets operating at less than 25 percent load will be exercised annually under full rated load (where possible) using a load bank. Generators having automatic start capability will be exercised by interrupting the normal electric service allowing the generator to start from a cold stance and pick up the load through the normal automatic starting cycle. At critical facilities, the test switch on the automatic transfer panel will be used to start the generator and initiate the transfer of power. This will prevent the interruption of power to the facility.

5.1.1.4. Installed units with manual start capability will be started and placed under load from a cold stance without being pre-run for a warm-up period.

5.1.1.5. Installed units operating with less than 25 percent load should be programmed by Civil Engineer (CE) for replacement with a smaller unit of appropriate size.

**NOTE:** Daily operation of generators without load for a short period of time can be detrimental to the engine and subsequently reduce the reliability of the equipment. Carbon deposits will build up to the point that ignition or fuel injection systems are restricted, resulting in reduced power and poor speed regulation under actual load conditions.

5.1.2. Maintenance Actions/Procedures:

5.1.2.1. The Power Production Supervisor (6 CES/CEOP) will ensure maintenance actions and procedures are developed from technical orders, manuals, manufacturer's literature, etc., that will ensure optimum operation of their component utility system supporting critical facilities. Maintenance and repair will be accomplished with a degree of urgency warranted with the using agency Force Activity Designator code.

5.1.2.2. 6 CES/CEOP will ensure generator set operating instructions and complete up-to-date single line power distribution and transfer diagrams are posted at each emergency power unit operating location. The symbols on the diagram will be suitably identified to eliminate any confusion between the diagram, operating instructions, and hardware. A legend will be included on the diagram indicating the normal switch position and the by-pass configuration, if applicable.

5.1.3. Emergency Spare Parts (CE forward store and Special Level): To ensure immediate repairs to utility systems supporting critical facilities, the stocking of spare parts is recommended. The Power Production supervisor is responsible for the following actions:

5.1.3.1. Develop and maintain a forward store of spare parts to support utilities for critical facilities.

5.1.4. System Surveillance:

5.1.4.1. The inspection of standby power will be scheduled to ensure all critical facilities are visited at least once every 14 days by Power Production shop representative. Medical care facilities will be inspected once every seven days.

5.1.4.2. Personnel inspecting a facility within their area of responsibility will be particularly alert to the appearance and/or operation of companion equipment. Deficiencies will be reported to the supervisor concerned and corrected as soon as possible.

5.1.4.3. 6 CES/CEOP will provide a Recurring Work Program (RWP) inspection check sheet including items to be inspected on the respective systems for all critical facilities. The shop representative will use this check sheet for inspecting each facility.

5.1.4.4. The 6 CES/CEOP Shop supervisor will visit each of the critical sites at least once every six months. These visits will be scheduled to ensure approximately 15 percent of the sites are inspected each month. Immediate corrective actions will be implemented on any deficiency observed.

5.1.4.5. An electrical engineer from the Engineering Flight (6 CES/CEC) will make an immediate site visit when/where a standby power outage is experienced. The electrical engineer will review demand loads on all generators to ensure they are properly loaded. Connected loads will be reviewed a minimum of once per year by an electrical engineer to senior electrician.

5.1.5. Response Times and Procedures: When a problem occurs, such as an outage or action that degrades a system's total capacity, 6 CES personnel will respond immediately to correct the problem. When more than one critical facility is affected, the attached Critical Facility Power Listing will be used to determine the order of response. The Base Fuels office will also respond when called by 6 CES personnel or the using agency to refuel generator tanks in the order of priority established by 6 CES.

5.1.6. Reporting Procedures: The 6 CES Commander (6 CES/CC) will provide HQ AMC/CEO with information relative to electrical outages. When applicable, the using agency will be used as a source of information to determine the outage and restoration times.

5.1.7. Housekeeping Standards: Civil Engineer shops will be responsible for ensuring that using agencies housing electrical equipment under their areas of responsibility comply with good housekeeping standards. Civil Engineer shops are responsible for the cleaning and painting of the mechanical and electrical equipment.

5.2. All using agencies will:

5.2.1. Be responsible for housekeeping standards. Buildings and structures housing electrical equipment will be swept clean and kept free of storage and superfluous items at all times. Utility rooms will be secured and posted to prohibit entry of unauthorized personnel.

5.2.2. Be responsible for requesting initial and follow-on emergency generator operator training. All requests will be submitted to 6 CES/CEOP by letter (3 copies), identifying personnel to be trained by name, rank and organization. Coordination of date and time will then be made by the Power Production Supervisor. Civil Engineer personnel will provide training to the designated operators. Training will be documented and must be signed by both the trainer and trainee, authenticating that training has been satisfactorily completed. One copy is retained in the Civil Engineer Squadron and one copy is placed in the vicinity of, or readily available to the equipment for which training was provided. All generator operators must be re-certified annually.

5.2.3. Maintain continued proficiency for all emergency generator operators. The using agency can accomplish this by assisting Civil Engineer Power Production personnel when they are performing scheduled generator load testing. This will ensure agency personnel are able to perform these functions when an emergency situation arises.

WILLIAM W. HODGES, Brig Gen, USAF  
Commander

**Attachment 1**

**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION**

***References***

AFI 32-1062, *Electrical Power Plants and Generators*

AFI 32-1063, *Electric Power Systems*

AFJMAN 32-1082, *Facilities Engineering, Electrical Exterior Facilities*

## Attachment 2

## CRITICAL POWER FACILITY LISTING

PRIORITY	FAC NUMBER	FACILITY	COVERAGE
1*	540/541	USCENTCOM	7 day/24 hours
2*	501/503/504	USSOCOM	7 day/24 hours
3*	1105	SOCCENT	7 day/24 hours
4*	54/191	CMD POST / ALT CMD POST	7 day/24 hours
5*	711/712/22	HOSPITAL	7 day/24 hours
6*	1750	SATCOM	7 day/24 hours
7*	1108	CONTROL TOWER	7 day/24 hours
8*	1145	TACAN	7 day/24 hours
9*	260	BASE LAN	7 day/24 hours
10*	867	LOCALIZER	7 day/24 hours
11*	1111	GLIDE SLOPE	7 day/24 hours
12*	40	TELEPHONE SWITCH	7 day/24 hours
13	75/76	POL PUMP HOUSE (X & Y)	7 day/24 hours
14*	3	BASE WEATHER	7 day/24 hours
15*	58	NIGHT LGT VAULT	7 day/24 hours
16	30	CE CONTROL CENTER	7 day/24 hours
17*	26	FIRE STATION & ALARM CONTROL CTR	7 day/24 hours
18*	8/91	CRASH FIRE STATION	7 day/24 hours
19*	528	SECURITY POLICE CENTER	7 day/24 hours
20*	1062	BASE FUELS DISPATCH	7 day/24 hours
21*	925	COMMISSARY	7 day/24 hours
22*	48	MOBILITY PROCESSING CTR	7 day/24 hours
23	63	WW LIFT STATION	7 day/24 hours
24	66	WW TREATMENT PLANT	7 day/24 hours
25	347	CE COMPUTER BLDG	7 day/24 hours
26	21	WW LIFT STATION	7 day/24 hours
27	633	WW LIFT STATION	7 day/24 hours
28	22	WW LIFT STATION	7 day/24 hours

\*DENOTES AMC REPORTABLE.

Outages on all facilities with coverage of 7 days/24 hours are to be treated as emergencies.