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Facilities Engineering

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Southern Region Emergency Power Generator Maintenance Program

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SUMMARY OF REVISIONS: This supplement supersedes National Weather Service Southern Region Supplement 04-2005 dated May 2, 2005, applicable to NWSI 30-4104. The primary changes are:

Adding the reference of ASOS were needed throughout the document.

Section 3. Has been updated to redefining the reference of the attachments, documents required by contractors, more detail to periodic inspections, personnel involvement, and bi-weekly testing.

Section 4. Updated personnel involved with training.

Section 7. Change to office title.

Steven Cooper for	November 18, 2008
Bill Proenza,	Date
Director, Southern Region	

Southern Region Emergency Power Generator Maintenance Program

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1. Description of EPG System. This supplement covers all Emergency Power Generators (EPG) at the Weather Forecast Office (WFO), collocated WFO/ River Forecast Center (RFC), Radar Data Acquisition (RDA) sites , Automated Surface Observing Systems (ASOS) sites, and NOAA Weather Radio (NWR) sites. The EPG system consists of the following components:

- a. Engine
- b. Generator and switch gear Automatic
- c. Transfer Switch (ATS)
- d. Intake and exhaust system
- e. Battery, charger and heater
- f. Engine heater
- g. Control assembly
- h. Load bank
- i. Aboveground Fuel Storage Tank
- j. (AST) Leak detection system
- k. Day tank and pump
- l. Remote Status Panel

2. Responsibilities.

2.1. The Meteorologist-in-Charge (MIC) and/or Hydrologist-in-Charge (HIC) are responsible for ensuring that all maintenance tasks are performed. These tasks include corrective maintenance

(CM), monthly inspections, annual preventative maintenance (PM), and quality control inspections to keep each Emergency Power Generators (EPG) in their County Warning Area in proper working condition. The MIC/HIC, in coordination with the Facilities Engineering Technician (FET), determines the most efficient and effective methods for accomplishing all maintenance tasks.

2.2. The FET provides technical expertise and knowledge necessary to assist the MIC/HIC and the Regional Headquarters in the maintenance, replacement, and repair of EPG systems. The FET is responsible for troubleshooting problems, formulation of Service Maintenance Agreements and repair contracts by providing statements of work, locating contractors, and obtaining bids. In addition, during their periodic visits, the FET will perform applicable PM and repair as required, review/assist with the Monthly Inspection Checklists, perform annual quality assurance inspections, and oversee/review any work performed by a contractor.

2.3. The Administrative Support Assistant (ASA) will provide administrative assistance in preparation of all contract documents (CD-435s, CD-404s, Work Statements, etc.) from draft documents provided by the local WFO staff or FET.

2.4. The Requesting Official or his/her designee is responsible for certifying or processing the payment for services. The Requesting Official for Commerce Bankcard purchases is the person ordering the service. The Requesting Official for Purchase Orders (CD-404, Optional Form 347) is the person initiating the CD-435 listed in the box titled, "Title of Requester." The FET will certify for payment all Purchase Orders (CD-404, Optional Form 347) initiated by the Facilities Program Manager.

3. Maintenance. All preventative and corrective maintenance shall be documented in EMRS by the person who initiates the service or repair. For continuity and familiarity with the EPG system, the same annual preventive maintenance contractor should be used to perform corrective maintenance.

3.1. WFO Emergency Power Generators.

3.1.1. Monthly Inspections. Monthly inspections of all WFO Emergency Power Generator (EPG) systems are required. The Monthly Inspection Checklist (Attachment A-1) shall be filled out by the MIC/HIC designee and kept on file at the WFO. A copy of each checklist shall be sent to the FET upon completion.

3.1.2. Annual Preventative Maintenance and Inspection. Annual PM and inspection outlined in Attachment B shall be accomplished each year (or every 250 operating hours) by a certified EPG maintenance contractor. The contractor shall provide an itemized invoice documenting the service performed or fill out the Annual EPG PM and Inspection Checklist (Attachment B-1) to record the service. The FET will initiate an EMRS WS Form A-26, Maintenance Record for each WFO EPG in their area of responsibility and will fill out the Annual Quality Control Report (Attachment C-1).

3.1.3. Corrective Maintenance. All corrective maintenance shall be recorded in EMRS. A WS Form A-26, Maintenance Record, shall be created by the person initiating the corrective maintenance action.

3.1.4. Resistive Load Run. As required, the FET will contract to connect a resistive load bank and run the EPG under 100% load for no less than two hours. This action is required to prevent "wet stacking" typically caused by engines operating under 50% capacity.

3.2. NWR Emergency Power Generators.

3.2.1. Periodic Inspections. Periodic inspections of all NWR Emergency Power Generators (EPG) and ASOS EPG's systems maintained by NWS are required. The Monthly Inspection Checklist (Attachment A-1) shall be filled out during each visit (not to exceed one per month or a minimum of one per quarter) to the NWR site and kept on file at the WFO. A copy of each checklist shall be kept on file at the responsible Weather Forecast Office. During the periodic inspection the following steps should be taken to verify proper operation: Turn off commercial power -The EPG should start -The Automatic Transfer Switch (ATS) should transfer the load -Run EPG under load for at least 5 minutes -Turn commercial power back on -The ATS should transfer load back to commercial power -After approximately 5 minutes (cool down period) the EPG should shut down.

3.2.2. Generator. The EPG shall be setup for either a weekly or bi-weekly exercise cycle. This cycle is dependent on the ATS timer capabilities.

3.2.3. Annual Preventative Maintenance and Inspection. Annual PM and inspection outlined in Attachment B-1 shall be accomplished by the FET, RMS, ET, or a certified EPG maintenance contractor. The entity performing the annual maintenance shall fill out the Annual EPG PM and Inspection Checklist to record the service and an EMRS WS Form A-26, Maintenance Record should be initiated to document the action(s) taken.

3.2.4. Corrective Maintenance. All corrective maintenance shall be recorded in EMRS. A WS Form A-26, Maintenance Record, shall be created by the person initiating the corrective maintenance action.

3.3. WSR-88D Emergency Power Generators.

3.3.1. WSR-88D EPG maintenance shall be performed in accordance with applicable WSR-88D maintenance requirements.

4. Training. The MIC/HIC, Facilities Program Manager, or FET Supervisor will ensure that his/her staff is trained and qualified to operate the equipment and perform EPG maintenance and repair to the extent necessary to fulfill the requirements contained herein.

5. Contract Administration. During the performance of the generator maintenance service contract the Requesting Official or his/her designee will perform quality control oversight to ensure the service contractor is fulfilling all contract requirements. Anytime the contractor fails to comply with the contract, the Requesting Official will document the non-compliance and notify the Contracting Officer immediately.

6. Operational Policy. The EPG, except for ASOS and NWR sites, is a part of an Emergency Power System (EPS) which includes the Uninterruptible Power Supply (UPS) at the WFO and Transition Power Supply (TPS) at the radar site. The Southern Region operational policy is to allow the EPS to work as designed and automatically transfer to emergency power if there is a loss of commercial power. To ensure the EPS works properly it shall be exercised weekly or bi-weekly, or during normal visits to remote RDA, ASOS, and NWR sites, under full load for one hour. If the UPS or TPS is out of service for any reason, or the office suffers a prolonged period of commercial power fluctuations, or any unforeseen power circumstances arise, the MIC/HIC or his/her designee may decide a manual transfer to the EPG until the situation passes.

7. Statements of Work. A Statement of Work (SOW) will be provided by the FET upon request as a guide to be used in performing work covered under this supplement. If work is required other than preventive maintenance, an additional SOW will be prepared by the FET and/or Electronics and Facilities Branch to cover that work.

A-1

MONTHLY EPG INSPECTION REPORT

SITE ID:	MODEL:	SERIAL #:		
Date:				

Pre-Operational Checks

Engine:

Hoses & Belts, <i>(Pass, Fail)</i>				
Oil Level, <i>(OK, ADD)</i>				
Air Cleaner, <i>(Pass, Fail)</i>				
Block Heater, <i>(Pass, Fail)</i>				
Radiators Clean, <i>(Pass, Fail)</i>				
Coolant Level <i>(Pass, Fail)</i>				

Battery:

Terminal Condition, <i>(Pass, Fail)</i>				
Water Level, <i>(OK, ADD)</i>				
Battery Charge Rate, <i>(Volts)</i>				

Operational Check

Three Phase Position L1-L2:

Volts				
Amps				
Hertz				

Three Phase Position L1-L3:

Volts				
Amps				
Hertz				

Three Phase Position L2-L3:

Volts				
Amps				
Hertz				

Engine:

Proper Operational Transfer, <i>(Pass, Fail)</i>				
Exhaust, Engine Noise, <i>(Pass, Fail)</i>				
Oil Pressure, <i>(PSI)</i>				
Oil Temperature, <i>(Fahrenheit)</i>				
Water Temperature, <i>(Fahrenheit)</i>				
Presence of Leaks, <i>(Pass, Fail)</i>				
Lamp Check, <i>(Pass, Fail)</i>				

Louvers:

Proper Operation, <i>(Pass, Fail)</i>				
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Post-Operational Checks

Fuel Level				
Engine Hours				
Initials / Position				

B-1

ANNUAL EPG INSPECTION CHECKLIST

ENGINE

General

- Change/clean crankcase breather
- Inspect air cleaner (replace as necessary)
- Drain condensate trap
- Inspect air intake system
- Inspect exhaust system
- Inspect engine starting system
- Inspect spark plugs/wires/distributor
- Clean battery terminals as needed
- Check electrolyte level (refill as needed)
- Check batt. charger for proper charging rate
- Change batteries (every three years)

Lubricating System

- Change oil and filter
- Inspect lube oil heater
- Change hydraulic governor oil
- Check for oil leaks

Coolant System

- Record antifreeze protection level
- Record DCA level
- Check coolant level (refill as needed)
- Inspect clamps and hoses
- Verify operation of engine block heater
- Inspect belt condition and tension
- Check for exterior leaks
- Verify operation of remote radiator motor
- Grease all lubrication points
- Change DCA coolant filter
- Drain and flush system - refill per manufacturers recommendation (every 3 years)

Fuel System

- Inspect fuel lines and hoses
- Inspect day tank and float assembly
- Check fuel transfer pump
- Check governor and linkage
- Check level of fuel in supply tanks

- Drain water from filter/tanks
- Change fuel filter(s)
- Adjust injectors and valves as necessary

Run engine and:

- Record oil pressure
- Record oil temp
- Record voltage
- Record water temperature
- Record amperes
- Record hours
- Test safety shutdown circuits/alarms
- Check rain cap operation
- Check for vibration or noise
- Inspect operation of intake louvers

GENERATOR

General

- Inspect/lubricate end bell bearing
- Inspect brushes, brush holders, and
- Inspect cooling screen and alternator
- Verify connections and insulation condition
- Verify operation of shunt trip
- Operate circuit breaker manually
- Clean vent screens
- Tighten all panels, electrical connections
- Check sub-base isolators and tighten lock-nuts

Load Bank Testing

- Perform resistive load bank test with no interruption of normal power supply (record results in comments section below)

With engine running and load on generator:

- Record voltage
- Record amperes
- Record RPM's
- Calibrate control meters as needed
- Verify operation of lamps on panel

Comments: _____

Performed By: _____ Date: _____
 Title/Company: _____

C-1
ANNUAL QUALITY CONTROL REPORT
(Performed by FET)

- Review WFO file to ensure Monthly Inspection Reports are up to date.
- Review Monthly Inspection Reports for problems and discrepancies.
- Ensure generator is set up to perform a weekly run.
- Check engine coolant level.
- Check block heater operation.
- Drain water from fuel filter.
- Drain exhaust condensation trap.
- Check anti freeze and DCA concentration.
- Check air cleaner.
- Participate in monthly inspection by local staff during generator run.

Comments: _____

For all discrepancies create an appropriate WS Form A-26, Maintenance Record and enter into EMRS.

Performed By: _____ Date: _____