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Facilities Engineering
Facilities Management, NWSPD 30-41

Operations and Maintenance, NWSI 30-4104

SOUTHERN REGION BACKUP POWER GENERATOR MAINTENANCE PROGRAM

NOTICE: This publication is available at: http://www.nws.noaa.gov/directives/.

OPR: W/SR42 (M. DeGeorge) **Certified by:** W/SR4 (J. Duxbury)
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SUMMARY OF REVISIONS: This supplement supersedes National Weather Service Southern Region Supplement 04-2005 dated January 14, 2011, applicable to NWSI 30-4104. The primary changes are:

Changed all entries of Emergency Power Generator (EPG) to Backup Power Generator (BPG)

Section 2.3 – Updated responsibilities for contract documentation.

Section 2.4 - Deleted requirement for FET to perform all Government

Purchase Card purchases.

Section 3.1.2 – Add Local FET can perform Annual Maintenance.

Section 3.1.3 – Corrected Spelling.

Section 3.1.5 – Revised setting ATS exercise time.

Section 3.3.1 – Removed no longer available reference.

Section 3.4.1- Correct section number and update references.

Section 5.-Upadted to Contractor Office Representative (COR).

Section 6.-Replaced TPS with UPS and deleted exercise requirement already covered in previous section.

April 21, 2020

Steven G. Cooper Date
Director, Southern Region

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1. Description of BPG System.

This supplement covers all Backup Power Generators (BPG) at the Weather Forecast Office (WFO), collocated WFO/ River Forecast Center (RFC), WSR-88D Radar Data Acquisition (RDA) sites, Automated Surface Observing Systems (ASOS) sites, and NOAA Weather Radio (NWR) sites. The BPG system may consist of the following components:
Engine

- Generator and Switch Gear
- Automatic Transfer Switch (ATS)
- Intake and Exhaust System
- Battery - Charger and Heater
- Engine heater
- Aboveground Fuel Storage Tank
- Day Tank and Pump
- Remote Status Panel

2. Responsibilities

2.1. The Meteorologist-in-Charge (MIC) and/or Hydrologist-in-Charge (HIC) is responsible for ensuring all maintenance tasks are performed. These tasks include corrective maintenance (CM), monthly inspections, annual preventative maintenance (PM), and quality control inspections to keep each Backup Power Generator (BPG) in their County Warning Area in proper working condition. The MIC/HIC, in coordination with the Facilities Engineering Technician (FET) and Electronics System Analyst (ESA), 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 BPG 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 FET will prepare all contract documents for services and repairs which are over the Government Purchase Card limit for services and will forward to Southern Region Headquarters. If FET is unavailable the WFO staff may prepare and submit documents.

3. Maintenance.

3.1 All preventative and corrective maintenance shall be documented in Engineering Management Reporting System (EMRS) by the person who oversees the service or repair. For continuity and familiarity with the BPG system, the same annual preventive maintenance contractor should be used to perform corrective maintenance.

3.2 WFO Backup Power Generators.

3.2.1 Monthly Inspections. Monthly inspections of all local WFO/RFC BPG 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.

3.2.2 Annual Preventative Maintenance and Inspection. Annual PM and inspection outlined in

Attachment B-1 shall be accomplished each year (or every 250 operating hours) by a certified BPG maintenance contractor or local FET. The contractor shall provide an itemized invoice documenting the service preformed or fill out the Annual BPG 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 BPG in their area of responsibility and will fill out the Annual Quality Control Report (Attachment C-1).

3.2.3 Corrective Maintenance. All corrective maintenance shall be recorded in EMRS. A WS Form A-26 shall be created by the person initiating the corrective maintenance action required and closed by the person involved with restoring service

3.2.4 Resistive Load Run. As required by the appropriate Kohler or ONAN BPG documentation, the FET will contract an authorized BPG maintenance contractor to connect a resistive load bank and run the BPG under 100% load for no less than two hours. This action is required to prevent "wet stacking" typically caused by engines operating under 50% load capacity.

3.2.5 The ESA, in coordination with the FET, will set the BPG ATS for a weekly exercise cycle. If the ATS can't be set for a weekly exercise it will be noted in the BPG log and then set to exercise as frequently as allowed by the ATS programming.

3.3 NWR Backup Power Generators.

3.3.1 NWR BPG maintenance shall be performed in accordance with EHB 7 Section 4.4. and the appropriate Kohler Service Manual.

3.4 WSR-88D Backup Power Generators.

3.4.1 WSR-88D BPG maintenance shall be performed in accordance NWS EHB 6-503-2 and/or NWS EHB 6-552 for Kohler Gen Sets or NWS EHB 6-551-13 for Onan set.

3.5 ASOS Backup Power Generators.

3.5.1. ASOS BPG maintenance shall be performed in accordance with NWS EHB 11, ASOS Maintenance Note 67 Revision B.

4. Training.

4.1. 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 BPG maintenance and repair to the extent necessary to fulfill the requirements contained herein.

5. Contract Administration.

5.1 During the performance of the generator maintenance service contract the COR 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 COR will document the non-compliance and notify the Contracting Officer immediately.

6. Operational Policy.

6.1 The BPG, except for ASOS and NWR sites, is a part of a Backup Power System (BPS) which includes

the Uninterruptible Power Supply (UPS) at the WFO and RDA sites. The Southern Region operational policy is to allow the BPS to work as designed and automatically transfer to backup power if there is a loss of commercial power. If the UPS 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 BPG until the situation passes.

7. Statements of Work.

7.1 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 or Electronics and Facilities Branch to cover that work.

A

MONTHLY BPG INSPECTION REPORT

SITE ID: **MODEL:** **SERIAL** #:

Date:				

Pre-Operational Checks

Engine:

Hoses & Belts, *(Pass, Fail)*				
Oil Level, *(OK , ADD)*				
Air Cleaner, *(Pass, Fail)*				
Block Heater, *(Pass, Fail)*				
Radiators Clean, *(Pass, Fail)*				
Coolant Level (*Pass, Fail*)				

Battery:

Terminal Condition*, (Pass, Fail)*				
Battery Charge Rate, *(Volts)*				

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, *(Pass, Fail)*				
Exhaust, Engine Noise, *(Pass, Fail)*				
Oil Pressure, *(PSI)*				
Oil Temperature*, (Fahrenheit)*				
Water Temperature*, (Fahrenheit)*				
Presence of Leaks, *(Pass, Fail)*				
Lamp Check*, (Pass, Fail)*				

***Louvers*:**

Proper Operation**,** *(Pass, Fail)*				

Post-Operational Checks

Fuel Level				
Engine Hours				
Initials / *Position*				

B
ANNUAL BPG 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: _____

C

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 and enter into EMRS.

Performed By: _____ Date: _____