

**POWER PLANT
EMERGENCY OPERATION EVALUATION
CHECK LIST**

1. GENERAL

1.01 This section:

(a) Describes a check list for evaluating how well an office (local or toll) maintains operation and provides service during the absence of commercial power

(b) Tells how to review and report:

- Power plant capacity
- Station or office loads
- Battery reserves

1.02 It is reissued to:

- Update the Emergency Operation Evaluation Check List, Form P 2729
- Reflect the revised Form P 2777 Work Sheet.

Note: Marginal arrows used to denote changes are omitted.

1.03 Requirements may vary between locations.

For example, engine alternators in locations near large engine-repair shops or engine distributors do not require the spare parts, material, or tools required in a remote area.

2. PREPARATION OF CHECK LIST

2.01 The complete checklist, Sections A, B, C, is to be completed at each Company location every 3 years. Power Maintenance Staff will assist local supervision and craft personnel in performing the triennial evaluation checklist and emergency operation test.

2.02 Section B — The Operational Test is to be completed annually by the local supervisor responsible for the office, under the direction of the District Manager. Local forces are to complete the operational test without assistance of power staff unless conditions require their assistance.

2.03 The checklist, Form P 2729 (Exhibit 1) covers:

Section A — Power Equipment Evaluation

- Safety
- Primary AC Power System
- Power Plants — General
- Charging Equipment
- Batteries
- Ringing Plants
- Engine Alternators
- Other Power Alarms

Section B — Operational Test

- Power Shutdown

Section C — Audit and Administrative Items

2.04 Place a check (✓) in the S column if the item is satisfactory, or in the U column if the item is unsatisfactory.

Note: Some unsatisfactory items could be the result of past emergency operations or known existing conditions not meeting requirements. For example, an office load has increased to the point that the emergency engine is not capable of maintaining generating equipment to meet the office load.

NOTICE

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SECTION 002-502-914PT

2.05 The Check Point column contains a list of key points to be checked. The Explanation/Comments column is used to list items found needing correction. The Responsible Party column is used to list who made corrections or is responsible for corrections, ie, local power equipment maintenance supervisor, power maintenance engineering staff or building engineers, etc.

3. WORK SHEETS

3.01 Work Sheets P 2726, Power Plant Data, and P 2727, Bell System Practices — Power Plant, are provided to facilitate the checking of key items on the check list. These forms are illustrated in Exhibits 2 and 3.

3.02 Work Sheet P 2726 contains:

- (a) Blank columns for entering:
 - (1) Type of power plant
 - (2) Minimum operating voltage
 - (3) Office load
 - (4) Number of units and charging capacity of each

- (5) Total capacity for each type of power plant

- (6) Calculated battery reserve

- (b) Spaces are provided for designating whether or not the charging capacity is adequate for the discharge test. Place a check mark (✓) under the S column for satisfactory or under the U column for unsatisfactory, as appropriate.

3.03 Work Sheet P 2727 lists applicable sections for power plant. Columns are provided for entering:

- (a) The authorized issue number taken from the current index.
- (b) The issue number of the practice actually filed in the active instruction file.

Note: Addenda or appendices may be added to the list. Any differences in issue number or any missing sections would indicate an unsatisfactory condition in need of corrective action.

EMERGENCY OPERATION EVALUATION

NAME(S) _____

LOCATION _____ DATE COMPLETE _____
 DIVISION _____ EQPT./TRANS. SUPV. _____
 DISTRICT _____

CHECK POINT	STATUS			EXPLANATION/COMMENTS	RESPONSIBLE PARTY (ENTER DATE WHEN CORRECTED)
	NA	S	U		
SECTION A POWER EQUIPMENT EVALUATION					
1. SAFETY					
A. Areas Clear of Obstructions, Safety Hazards (167-600-900PT)					
B. Ventilation, Lighting Adequate					
C. Fire Extinguishers in Proximity of Equipment					
D. Electrical Rubber Gloves, Fuse Pullers, Etc. (157-601-701, 026-379-901PT, 081-710-200)					
E. First Aid Kits					
F. Protective Guards Around Exhaust Pipes, Rotating Machinery (167-600-900PT)					

CHECK POINT	STATUS			EXPLANATION/COMMENTS	RESPONSIBLE PARTY (ENTER DATE WHEN CORRECTED)
	N/A	S	U		
G. Other					
2. PRIMARY AC POWER SYSTEM					
A. Main HSP Meters and Indicator Lamps (171-199-900PT, 901PT)					
B. Circuit Breaker Mechanical Interlock Devices (167-600-900PT) (1) Designation Adequate (2) Mimic Taping (171-199-900PT)					
(3) AC Single Line Diagram Available (171-199-900PT) (4) Power Failure Instructions <i>Appropriate</i> For System (167-600-900PT, 171-120-301PT)					
C. Manual/Hand Operability of Switchgear					
D. Offices <i>Without</i> Stationary Alternator Sets -- Connections For Portable Sets Standard					

CHECK POINT	STATUS			EXPLANATION/COMMENTS	RESPONSIBLE PARTY (ENTER DATE WHEN CORRECTED)
	N/A	S	U		
E. Verify that adequate AC lighting is provided in Switchgear room/area					
F. Verify adequate DC (EM) lighting in Switchgear room/area					
G. Other:					
3. POWER PLANTS – GENERAL					
A. Principle Office Ground Termination Point – Properly Connected and Designated					
B. Distribution Cabinets, PDSC, BDFB, Etc. (1) Temperature (2) Connections (3) Labeling/Stenciling (4) General Condition (026-370-701, 030-740-701)					
(5) Check fuses for overheating and corrosion					
(6) Inspect rear of power boards for loose connections, poor house-keeping, damaged cables					

CHECK POINT	STATUS			EXPLANATION/COMMENTS	RESPONSIBLE PARTY (ENTER DATE WHEN CORRECTED)
	N/A	S	U		
C. Emergency Cell Switch (1) General Condition – make visual inspection front and rear (2) Limiting Resistors (3) IR Drop (25MV Max) (4) Voltage Relay Setting					
(5) Manual Operation (6) Check EM cell Trickle chargers (030-740-701, 030-785-701)					
D. Counter EMF Devices (1) General Condition (2) Operation – Voltage Drop Selenium 2.50V Max Silicon 2.83V Max (157-322-701)					
(3) Check plant output current within capacity of counter cell (4) EC/CEMF Voltage Relay Operation					
E. Resistor Devices (1) General Condition (2) Operation – Voltage Drop 6V Per Group Max (167-643-301, 302)					
F. Alarms (and Voltage Sensors) (1) Major – Audible Visible (a) High – Low Voltage (b) High Voltage Shutdown (c) Discharge Fuse					
G. Emergency (DC) Lighting (1) Adequacy (167-600-900PT) (2) General Condition and Operation of Relays and Contactors (030-741-701)					

CHECK POINT	STATUS			EXPLANATION/COMMENTS	RESPONSIBLE PARTY (ENTER DATE WHEN CORRECTED)
	N/A	S	U		
H. Other					
4. CHARGING EQUIPMENT A. Rectifiers (1) Voltage Regulation (2) Current Limit (3) Alarms (4) General Condition					
(5) Turn off each rectifier, one at a time. Observe idling units pick up load. (6) Turn rectifiers back on. Observe "current walk in" circuit functions.					
B. Charging Capacity Reserve Unit Adequate To Replace Largest Unit In Plant (157-000-901PT)					
C. Output Ammeters Red-Lined At Maximum Output (100-510-701)					
D. If Auto-Sequence start control provided. Verify proper operation.					

CHECK POINT	STATUS			EXPLANATION/COMMENTS	RESPONSIBLE PARTY (ENTER DATE WHEN CORRECTED)
	N/A	S	U		
E. DC – DC Converters (1) Voltage Regulation (2) Current Limit (3) Alarms (See Sheet 5) (4) Voltmeter Accuracy					
(5) Two or more converters in parallel – Turn one off – Check operation of idle convertor and alarms					
F. Motor – Generators (1) Operating Generators – Inspect Condition (2) Idle Generators – Condition (3) Turn off operating generators. Do idle units pick up load properly?					
G. Inverters (1) Voltage Output (2) Frequency/Speed (3) Alarms (See Sheet 5) (4) Check load with Clamp-on ommeter.					
5. OTHER POWER ALARMS A.					
(1) Ringing Fail (2) Ringing Fuse (3) EM Cell/CEMF Fail (4) EC Elapsed Timer					
(5) AC Fail (Large Sites)					

CHECK POINT	STATUS			EXPLANATION/COMMENTS	RESPONSIBLE PARTY (ENTER DATE WHEN CORRECTED)
	N/A	S	U		
B. Minor – Audible Visible (1) High – Low Float (2) Rectifier/Gen. Fail (3) Charge/Misc. Fuse (4) Engine Altnr. Alarms					
C. Alarm Appearance at TASC, SCC, C1, E2 Centers					
6. BATTERIES A. Protective Equipment Gloves, Goggles, Aprons (157-601-701)					
B. Acid Neutralizing and Wash Facilities					
C. General Condition Corrosion, Cracking, Plate Growth, Explosion-Proof Vents, Etc. (157-601-701)					
D. Connectors Tightness, IR Drop on Discharge (20MV Max) (157-601-701)					

CHECK POINT	STATUS			EXPLANATION/COMMENTS	RESPONSIBLE PARTY (ENTER DATE WHEN CORRECTED)
	N/A	S	U		
E. Other:					
7. RINGING PLANTS					
A. General Condition Inspect (163-650-701)					
B. Operation (1) Voltage Regulation (2) Transfer Features (3) Alarms (See Sheet 6)					
C. Control (1) Verify transfer to reserve set – simulate failure of G1 (main set). (2) Restoral – Operate RST key – verify transfer back to G1, alarms cancel.					
D. Other:					

CHECK POINT	STATUS			EXPLANATION/COMMENTS	RESPONSIBLE PARTY (ENTER DATE WHEN CORRECTED)
	N/A	S	U		
8. ENGINE ALTERNATORS					
A. Ear Protection Available (167-600-900PT)					
B. General Condition (1) Loose/Missing Hardware, Nuts, Bolts, Clamps, Etc. (2) Fuel, Oil, Water Leaks					
C. Fuel System (1) Fuel Tank Water Test (065-320-301) (2) Pumping System on Essential Power					
(3) Main and Day Tank High/Low Level Alarms If Equipped (157-000-900PT) (4) Components Identified – Schematic Diagram Available					
D. Cooling System (1) Antifreeze/Inhibitor (2) Radiator Clean (3) Water Preheater (4) Louvers Operate					
(5) Remote Pumps On Preferred Power (065-305-301)					
E. Other:					

CHECK POINT	STATUS			EXPLANATION/COMMENTS	RESPONSIBLE PARTY (ENTER DATE WHEN CORRECTED)
	N/A	S	U		
F. Starting System – Electric (1) Battery Condition (Including Control Batteries) (157-601-701) (2) Battery Voltage (3) Electrolyte Level					
G. Starting System – Air (1) AC and DC Compressors Operational (2) Manual Instructions For DC Compressor (026-392-701)					
H. Inspect air intake of Turbine Alternator – Is plenum free of foreign material? Note: This may depend on accessibility to plenum.					
I. Automatic Timing Devices Operate Properly (Settings Appropriate For Site)					
J. Alternator Load Sufficient For Diesel Engine Exercise.					
K. Engine Instruments Operational and Marked for Maximum and Minimum Points.					
L. Other:					

CHECK POINT	STATUS			EXPLANATION/COMMENTS	RESPONSIBLE PARTY (ENTER DATE WHEN CORRECTED)
	N/A	S	U		
				SECTION B OPERATIONAL TEST	
1. OPERATIONAL TEST A. Power Shutdown Per P 4484 BSP 002-502-915PT				METHOD OF PROCEDURE	
B. Auxiliary Equipment On (1) 504, 523 Reserve AC Plant (2) Emergency DC Light				RECORD RESULTS ON FORM P 2183B OFFICE SUMMARY	
C. Ringing Transfer					
D. Standby Engine Alternator Startup and Transfer					
E. 90 Min. Battery Discharge Test					
F. Equipment Restart					

CHECK POINT	STATUS			EXPLANATION/COMMENTS	RESPONSIBLE PARTY (ENTER DATE WHEN CORRECTED)
	N/A	S	U		
G. Adequacy of EM Lighting in Engine Room					
H. Other:					

CHECK POINT	STATUS			EXPLANATION/COMMENTS	RESPONSIBLE PARTY (ENTER DATE WHEN CORRECTED)
	N/A	S	U		
SECTION C AUDIT AND ADMINISTRATIVE ITEMS					
A. P 527 Current Form on File Pwr. Mtce. and Copy in Pwr. Log					
B. Current Emergency Call List Posted (1) in Pwr. Room (2) in SCC (Emer. Book)					
C. Portable Generator Sets Available					
D. Check P 529 Record of Daily Power Plant Inspections					
E. Check Power Log Book (1) List of Outside Suppliers (2) Listing of Qualified Em. Engine Repair/Parts (3) Where to Get Fuel					
(4) Record of Serious Failures and Corrections (5) Record of Fuel Sample Analysis (6) Record of Crankcase Oil Analysis (7) Particulars of Fuel System					

CHECK POINT	STATUS			EXPLANATION/COMMENTS	RESPONSIBLE PARTY (ENTER DATE WHEN CORRECTED)
	N/A	S	U		
F. Batteries (1) Check "Battery Logs" P 563 (a) Specific Gravity of EM Cells (b) Pilot Cell Voltage Readings (2) Individual Cell Voltage Readings Taken and Current					
G. Quarterly Inspections Current (1) Check Summary (E 5453) (2) Physical Inspection of Batteries (3) Are EMC Switch Routines Properly Scheduled? (4) Inspect					
(5) Knife Switch Routines Scheduled (6) Inspect					
H. EM Lighting Relays (1) Routines Scheduled (2) Check Summary Log/Inspect Equipment					
I. Power Plants – Rectifiers (1) All Applicable Routines For Rectifiers Scheduled (2) Does Inspection Indicate Work Current/Check Summary Log?					
J. Power Plants – Generators (1) All Applicable Routines For Generators Scheduled (2) Does Inspection Indicate Work Current/Check Summary Log?					
K. Ringing and Tone Plants (1) All Applicable Routines Scheduled (2) Check Summary Logs (3) Does Power Log Indicate:					

CHECK POINT	STATUS			EXPLANATION/COMMENTS	RESPONSIBLE PARTY (ENTER DATE WHEN CORRECTED)
	N/A	S	U		
(a) Ringing Plant Transfer on Power Dups? (b) Ringing Plant Transfer on Power Failure? (4) Physical Inspection of Ringing Plant Indicate Work Being Done					
L. Power Failure (1) Are "AC Power Failure Instructions" (P 2380) Posted? (2) Are all Power Outages Logged on P 4175 (Record of Power Plant Outage)?					
M. Other Items:					



Pacific Telephone
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P-2727 (6-81)

WORK SHEET
BELL SYSTEM PRACTICES – POWER PLANT

PLANT SERIES	AUTH. ISSUE	FILED ISSUE	SUBJECT	COMMENTS
"POWER ENGINEERING MANUAL"			REFERENCE POWER MANUAL	
S.I. 60 – SECTION 13			MATERIALS AND SUPPLIES ENGINEERING COMPLANT PROCEDURES	
065-305-301			RESERVE ENGINES – COOLING SYSTEMS	
065-320-301			ENGINE FUEL AND CARE OF TANKS	
155-000-910PT			TELEPHONE POWER MTCE. NOTES	
155-199-902PT			ENGINE GENERATOR SETS ROUTINE RUNS	
155-199-902PT APPENDIX 1			PORTABLE EMERGENCY GENERATOR SETS	
157-000-900PT			EXCHANGE LOAD READINGS	
157-601-301			LEAD ACID TYPE STORAGE BATTERIES FLOAT OPERATION	
157-601-701			STORAGE BATTERIES, LEAD, ACID, REQUIREMENTS AND PROCEDURES	
167-600-900PT			POWER PLANT GENERAL INSTRUCTIONS AND DAILY POWER PLANT INSPECTION	
ADD 171-120-301 171-120-301PT			POWER FAILURE ROUTINE POWER FAILURE ROUTINE	
171-140-501			EMERGENCY LIGHTING EQUIPMENT TESTS AND INSPECTIONS	
171-199-900PT			BASIC FUNDAMENTALS OF TESTING AND MAINTAINING BLDG. ELECTRICAL SWITCHGEAR AND ASSOC. EQUIPMENT	
171-199-901PT			MAINTENANCE OF BUILDING SWITCHGEAR	
760-510-150			PIPING IDENTIFICATION	

Exhibit 3