

TROUBLE SHOOTING TIPS (NICKEL-CADMIUM BATTERIES)

The 64 TROUBLE SHOOTING TIPS cover most battery servicing problems.
For any problem not covered below, refer to the battery manufacturer's manual.

* * * * * TROUBLE SHOOTING FORMAT * * * * *

#X (The number reference)
THE PROBLEM THE BATTERY IS EXHIBITING
*Probable causes of the problem
SUGGESTED CORRECTIVE ACTION

* * * * * TROUBLE SHOOTING TIPS * * * * *

#1
APPARENT LOSS OF CAPACITY
*Very common when recharging across constant potential bus, as in aircraft.
*usually indicates imbalance between cells due to the difference in
*temperature, charge efficiency, self-discharge rate, etc. between cells.
PERIODIC RECONDITIONING WILL RELIEVE THIS CONDITION.

#2
APPARENT LOSS OF CAPACITY
*Electrolyte level is too low. Battery not fully charged.
CHARGE, ADJUST ELECTROLYTE LEVEL, CHECK CAPACITY, CHECK CHARGING SYSTEM.

#3
LOW CELL CAPACITY
*Normal wear from long service
REPLACE WITH NEW CELL.

#4
CAPACITY LOSS
*Electrolyte level too low
RUN ELECTRICAL TESTS, ADJUST ELECTROLYTE LEVEL.

#5
CAPACITY LOSS
*In service charging rate too low
RUN ELECTRICAL TESTS, ADJUST CHARGING VOLTAGE.

#6
CAPACITY LOSS
*Service interval too long
SHORTEN SERVICE INTERVAL.

#7
COMPLETE FAILURE TO OPERATE
*Defective connection in equipment circuitry in which battery is installed
*(broken lead, inoperative relay or improper receptacle installation).
CHECK AND CORRECT EXTERNAL CIRCUITRY.

#8
COMPLETE FAILURE TO OPERATE
*End terminal connector loose or disengaged. Poor inter-cell connections.
CLEAN AND RE-TIGHTEN HARDWARE USING PROPER TORQUE VALUES.

#9

COMPLETE FAILURE TO OPERATE

*Open circuit cell.

REPLACE DEFECTIVE CELL.

#10

EXCESSIVE ELECTROLYTE OVERFLOW

*High charge voltage.

*High temperature during charge.

*Electrolyte level too high.

CLEAN BATTERY, CHARGE AND ADJUST ELECTROLYTE LEVEL.

#11

EXCESSIVE ELECTROLYTE OVERFLOW

*Loose or damaged vent cap.

CLEAN BATTERY, TIGHTEN OR REPLACE CAP, CHARGE AND ADJUST ELECTROLYTE LEVEL.

#12

EXCESSIVE ELECTROLYTE OVERFLOW

*Damaged cell & seal

DISCHARGE, SHORT OUT ALL CELLS TO 0 VOLTS, CLEAN BATTERY, REPLACE DEFECTIVE CELL, CHARGE AND ADJUST ELECTROLYTE LEVEL.

#13

EXCESSIVE ELECTROLYTE OVERFLOW

*Electrolyte level too high

CLEAN BATTERY, RUN ELECTRICAL TESTS, ADJUST LEVEL OF ELECTROLYTE.

#14

EXCESSIVE ELECTROLYTE OVERFLOW

*Relief valves loose or damaged

TIGHTEN OR REPLACE VALVES, CLEAN RECONDITION, RUN ELECTRICAL TESTS, ADJUST ELECTROLYTE LEVEL.

#15

EXCESSIVE ELECTROLYTE OVERFLOW

*Cell reversed during high rate discharge

CHECK IN-SERVICE CHARGING VOLTAGE, AGE, RUN ELECTRICAL TESTS.

#16

EXCESSIVE ELECTROLYTE OVERFLOW

*Overcharge at too high a rate

CHECK IN-SERVICE CHARGING VOLTAGE, RUN ELECTRICAL TESTS.

#17

FREQUENT ADDITION OR EXCESSIVE USE OF WATER

*Cells out of balance

DISCHARGE, SHORT OUT ALL CELLS TO 0 VOLTS, CLEAN BATTERY, REPLACE DEFECTIVE CELL, CHARGE AND ADJUST ELECTROLYTE LEVEL.

#18

FREQUENT ADDITION OR EXCESSIVE USE OF WATER

*Damaged "O" ring, vent cap

REPLACE DAMAGED PARTS.

#19

FREQUENT ADDITION OR EXCESSIVE USE OF WATER

*Leaking cell

DISCHARGE BATTERY AND REPLACE DEFECTIVE CELL, RECONDITION BATTERY.

#20

FREQUENT ADDITION OR EXCESSIVE USE OF WATER

*Charge voltage too high

ADJUST VOLTAGE REGULATOR.

#21

FREQUENT ADDITION OR EXCESSIVE USE OF WATER

*Service interval too long

SHORTEN SERVICE INTERVAL.

#22

FREQUENT ADDITION OR EXCESSIVE USE OF WATER

*Leaky cells, defective cells or defective relief valves

INSPECT FOR AND REPLACE DEFECTIVE CELLS OR VALVES.

#23

FREQUENT ADDITION OR EXCESSIVE USE OF WATER

*Overcharging too long at high temperatures

CHECK IN-SERVICE CHARGING VOLTAGE.

#24

FREQUENT ADDITION OR EXCESSIVE USE OF WATER

*Cell imbalance

RUN ELECTRICAL TESTS.

#25

FAILURE OF ONE OR MORE CELLS TO RISE TO THE REQUIRED 1.55 VOLTS AT THE
END OF CHARGE.

*Cellophane separator damage

CHARGE BATTERY. IF THE CELL STILL FAILS TO RISE TO 1.55 VOLTS OR IF THE
CELL'S VOLTAGE RISES TO 1.55 VOLTS OR ABOVE AND THEN DROPS BY 0.05 VOLTS
OR MORE, REMOVE CELL AND REPLACE.

#26

CELL VOLTAGE FALLS BELOW 1.5 VOLTS DURING 0.1 C OVERCHARGE

*Separator damage

REPLACE WITH NEW CELL.

#27

FOAMING ELECTROLYTE - DURING CHARGE

*Contaminant in electrolyte

DISCHARGE BATTERY AND REPLACE DEFECTIVE CELL.

#28

FOAMING ELECTROLYTE - DURING CHARGE

*Apparent low electrolyte concentration following addition of water
RECONDITION BATTERY, REPLACE CELLS THAT CONTINUE TO FOAM.

#29

FOAMING ELECTROLYTE - AFTER ADDING WATER

*Electrolyte concentration low

DISCHARGE AND RUN ELECTRICAL TESTS.

#30

FOAMING ELECTROLYTE - CONTINUOUS DURING CHARGE

*Electrolyte contaminated by grease or oil

DISCHARGE, REPLACE CONTAMINATED CELLS, RUN ELECTRICAL TESTS.

#31

ZERO BATTERY VOLTAGE

*Loose main connector

TIGHTEN OR REPLACE CONNECTOR.

#32

ZERO BATTERY VOLTAGE

*Broken or loose terminal links

TIGHTEN OR REPLACE LINKS.

#33

ZERO BATTERY VOLTAGE

*Battery completely discharged

RECHARGE PER MANUAL, CHECK INSULATION LEAKAGE.

#34

ZERO CELL VOLTAGE

*Short circuit cell

REPLACE WITH NEW CELL.

#35

ABNORMALLY HIGH CELL VOLTAGE AT THE BEGINNING OF CHARGE

*Dry cell

ADD 5 TO 10 CC DISTILLED WATER, ADJUST ELECTROLYTE LEVEL AT END OF OVERCHARGE. CHECK CELL PERFORMANCE FOR PERMANENT DAMAGE.

#36

PARTICLES OF PLATE MATERIAL

*Electrolyte concentration too high (caused by adding potassium

*hydroxide, which raises specific gravity).

DISCHARGE, SHORT OUT ALL CELLS TO 0 VOLTS, CLEAN BATTERY, REPLACE DEFECTIVE CELL, CHARGE AND ADJUST ELECTROLYTE LEVEL.

#37

FOREIGN MATERIAL WITHIN THE CELL CASE

*Foreign material introduced into the cell through addition of impure

*water or water contaminated with acid

DISCHARGE, SHORT OUT ALL CELLS TO 0 VOLTS, CLEAN BATTERY, REPLACE DEFECTIVE CELL, CHARGE AND ADJUST ELECTROLYTE LEVEL.

#38

LOW VOLTAGE OUTPUT

*Continuous demand without charging

RUN ELECTRICAL TESTS.

#39

LOW VOLTAGE OUTPUT

*In service charger set too low

RUN ELECTRICAL TESTS, RESET REGULATOR.

#40

LOW VOLTAGE OUTPUT

*Loose terminal connectors
TORQUE TO SPECIFICATIONS, RUN ELECTRICAL TESTS.

#41
LOW VOLTAGE OUTPUT
*Main connector loose, burned, pitted
CLEAN OR REPLACE, TIGHTEN, RUN ELECTRICAL TESTS.

#42
LOW VOLTAGE OUTPUT
*Defective cell or cell with reversed polarity
REPLACE DEFECTIVE CELL, RUN ELECTRICAL TESTS.

#43
LOW VOLTAGE OUTPUT
*Cell to case current leakage
DISCHARGE, DISASSEMBLE, CLEAN, REPLACE DEFECTIVE CELL(S) AND/OR
INSULATION, RUN ELECTRICAL TESTS.

#44
NO VOLTAGE RISE IN PRESCRIBED CHARGE TIME
*New battery or one inactive for long period of time
CONTINUE CHARGING UNTIL VOLTAGE RISE, CHECK BATTERY TEMPERATURE.

#45
NO VOLTAGE RISE IN PRESCRIBED CHARGE TIME
*Inaccurate ammeter and/or voltmeter
CALIBRATE METERS AND CONTINUE HIGH RATE OF CHARGE UNTIL VOLTAGE RISE.
CHECK BATTERY TEMPERATURE.

#46
NO VOLTAGE RISE IN PRESCRIBED CHARGE TIME
*Separator damage
REPLACE WITH NEW CELL.

#47
CORRODED CONNECTORS (TOP HARDWARE)
*Acid fumes or spray or other corrosive atmosphere
REPLACE PARTS. CLEAN ROOM, ELIMINATE ACID SOURCE. BATTERY SHOULD BE
KEPT CLEAN AND KEPT AWAY FROM SUCH ENVIRONMENTS.

#48
CORRODED CONNECTORS (TOP HARDWARE)
*Inadequate lubrication
CLEAN AND LUBRICATE PROPERLY.

10b3-49
DAMAGE TO PROTECTIVE NICKEL-PLATING
*Excessive exposure to electrolyte
REPLACE DAMAGED HARDWARE.

#50
DISTORTED CELL (CASE AND COVER)
*Overcharged, overdischarged, or overheated cell with internal short, or
*damaged separator
DISCHARGE BATTERY AND DISASSEMBLE, REPLACE DEFECTIVE CELL, RECONDITION
BATTERY. CHECK CHARGER/ANALYZER FOR PROPER OPERATION.

#51

DISTORTED CELL (CASE AND COVER)

*Plugged or inoperative vent

VERIFY OPERATION OF VENT AND REPLACE, IF NECESSARY.

#52

DISTORTED CELL (CASE AND COVER)

*Overheated battery. Charger/Analyzer failure.

CHECK CHARGER/ANALYZER FOR PROPER OPERATION. DISCHARGE BATTERY,
DISASSEMBLE, REPLACE DEFECTIVE PARTS, RECONDITION BATTERY.

#53

DISTORTED BATTERY CASE

*Explosion (caused by: Dry cells, Charger failure, High charge voltage,

*Plugged vent caps, Loose inter-cell connectors)

DISCHARGE BATTERY, DISASSEMBLE, REPLACE DAMAGED PARTS, RECONDITION.

#54

DISTORTED BATTERY CASE

*Overheating, lack of ventilation, or major explosion due to unusually

*high ambient temperatures, improper maintenance, too high charge rate,
or charger failure

DISCHARGE, DISASSEMBLE, REPLACE ALL DAMAGED PARTS WITH NEW PARTS OR
REPLACE ENTIRE BATTERY. CHECK ENTIRE VENTILATION SYSTEM, CHECK AIRCRAFT
CHARGING SYSTEM.

#55

DISTORTED BATTERY CASE

*Loose terminal nuts and links

MAKE SURE ALL CONNECTIONS ARE TIGHT.

#56

DISCOLORED OR BURNED TERMINAL OR INTER-CELL CONNECTORS.

*Dirty connections

CLEAN PARTS, REPLACE AS REQUIRED.

#57

DISCOLORED OR BURNED TERMINAL OR INTER-CELL CONNECTORS.

*Loose connection

CLEAN AND REPLACE HARDWARE. TIGHTEN TO PROPER TORQUE VALUES.

#58

DISCOLORED OR BURNED TERMINAL OR INTER-CELL CONNECTORS.

*Improper mating of parts

CHECK TO CONFIRM PARTS ARE CORRECT AND PROPERLY MATED. CLEAN AND REPAIR
PARTS AS REQUIRED. CHECK AIRCRAFT CONNECTOR MATING PARTS.

#59

AIRCRAFT CONNECTOR BURNED OR PITTED

*Aircraft main power switch left on during battery disconnect

CLEAN, REPAIR OR REPLACE PARTS

#60

AIRCRAFT CONNECTOR BURNED OR PITTED

*Aircraft connector worn beyond limits

INSPECT AND REPLACE AS REQUIRED.

#61

FAILURE OF HEATER (IN HEATED BATTERIES) TO OPERATE

*Break in heater filament

*Inoperative thermostat

CHECK CONTINUITY OF HEATER BLANKET WIRING AND THE THERMOSTAT.

#62

CELL TO BATTERY CAN LEAKAGE TO GROUND DETECTED

*Excessive spewage

CLEAN BATTERY, CHARGE, AND ADJUST ELECTROLYTE LEVEL. RECHECK FOR ELECTRICAL LEAKAGE.

#63

CELL TO BATTERY CAN LEAKAGE TO GROUND DETECTED

*Damaged cell case to cover seal

DISCHARGE BATTERY, DISASSEMBLE, REPLACE DEFECTIVE CELL, RECONDITION BATTERY.

#64

INSUFFICIENT INSULATION

*Excessive spewing of electrolyte, or water inside battery case.

DISCHARGE, DISASSEMBLE, CLEAN/REPLACE DEFECTIVE INSULATION AND/OR CELLS, RUN ELECTRICAL TESTS.

* * * * * END TROUBLE SHOOTING TIPS * * * * *