

MYTHS AND TRUTHS, DO'S AND DON'TS ABOUT

LI-POLY BATTERIES



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TOM HUNT - WRAM 2007

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THE BASICS

- ABOUT THREE TIMES THE CAPACITY FOR THE SAME WEIGHT OF THE BEST NICD OR NIMH
 - CELL NOMINAL VOLTAGE = 3.7v (NICD/NIMH IS 1.2V)
 - DO NOT EXCEED VOLTAGE = 4.2V
 - DO NOT DISCHARGE BELOW 2.6-2.7V
 - “SOFT” PACKAGED
- CELLS CAN BE PARALLELED FOR INCREASED CAPACITY AND LOAD CAPABILITY
 - NEED SPECIAL CHARGERS
- CLASSIFIED BY DISCHARGE (“C”) RATE. A 20C 2000MAH PACK SHOULD BE ABLE TO BE DISCHARGED AT 40AMPS! (DON’T BELIEVE IT OR AT LEAST, BE SKEPTICAL!)

MYTHS AND TRUTHS

MYTH - LI-POLY CELLS EXPLODE WITHOUT WARNING.
TRUTH – AN IMPROPERLY CHARGED OR DAMAGED LI-POLY CELL OR BATTERY CAN CATCH FIRE, SOMETIMES HOURS AFTER THE DAMAGE OR CHARGE, BUT THEY DO NOT EXPLODE!

MYTH - LI-POLY CELLS CAN BE DAMAGED IF THEY FALL BELOW 3V/CELL.
TRUTH – LI-POLY CELLS CAN BE DAMAGED IF THEY FALL BELOW 2.6-2.7V/CELL FOR A SIGNIFICANT AMOUNT OF TIME (HOURS, NOT MINUTES!)

MYTH – A “BLOATED” LI-POLY CELL CAN BE SQUASHED FLAT AND REUSED.
TRUTH – ABSOLUTELY NOT! A LI-POLY CELL THAT HAS BLOATED DUE TO OVERCHARGE OR EXCESSIVE DISCHARGE CURRENT IS AN ACCIDENT WAITING TO HAPPEN!

MYTHS AND TRUTHS

MYTH – YOU NEED TO USE A LI-POLY CAPABLE ESC WITH A LI-POLY PACK.

TRUTH – MOST TYPES OF FLYING DO NOT REQUIRE THIS SPECIAL FEATURE (MORE ABOUT THIS LATER) .

MYTH – LI-POLY CELLS OF THE SAME SIZE, WEIGHT AND CAPACITY WILL ALL PERFORM THE SAME.

TRUTH – INTERNAL CONSTRUCTION OF THE CELLS DICTATES THE PERFORMANCE ONE CAN EXPECT FROM A PARTICULAR MANUFACTURERS LI-POLY BATTERY.

MYTH –THE MANUFACTURERS “C” RATE IS CONSERVATIVE.

TRUTH – THE MANUFACTURERS “C” RATE IS OPTIMISTIC!
ONE SHOULD NOT “LOAD” A LI-POLY PACK TO MORE THAN 75% OF THE MANUFACTURERS “C” RATE FOR GOOD LIFE AND POWER.

MYTHS AND TRUTHS

MYTH – YOU SHOULD ALWAYS USE A “BALANCING” TYPE CHARGER.
TRUTH – THOUGH IT WILL NEVER HURT A PACK TO “BALANCE” IT FOR EVERY CHARGE, IT IS NOT ABSOLUTELY NECESSARY, ESPECIALLY ON “HEALTHY” PACKS.

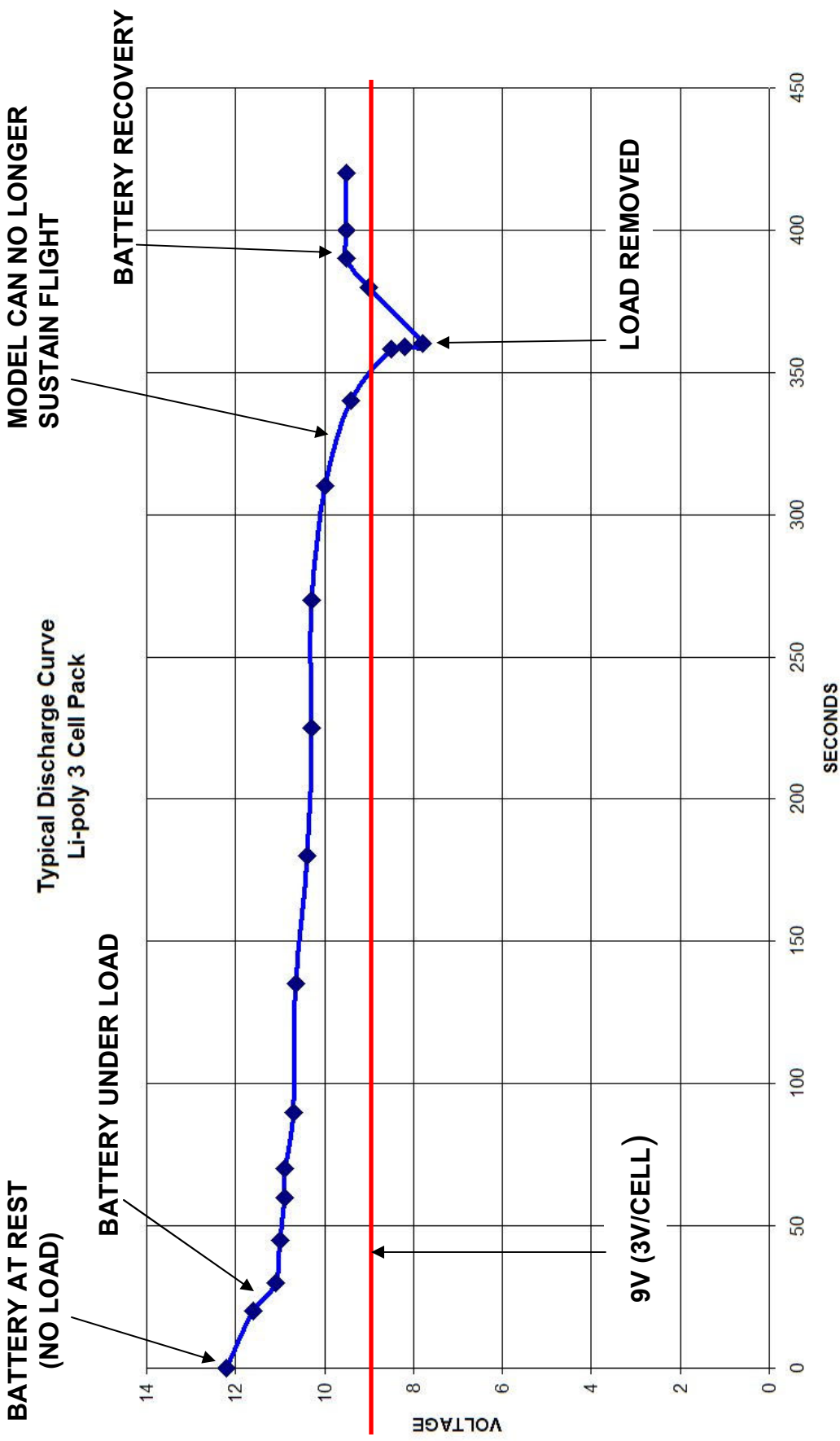
MYTH – LI-POLY CELLS SHOULD NOT BE CHARGED AT MORE THAN “1C” (2 AMPS FOR A 2000MAH PACK)

TRUTH – CERTAIN BALANCING CHARGERS CAN SAFELY CHARGE AT UP TO 3C OR 10AMPS WHICH EVER COMES FIRST. CHARGING AT GREATER THAN 1C HAS SHOWN TO SHORTEN THE LIFE CYCLES OF “LESSER QUALITY” LI-POLY BATTERIES WHETHER ON A BALANCING OR ORDINARY CHARGER.

MYTH – LI-POLY CELLS “LIKE” THE COLD!

TRUTH – LI-POLY BATTERIES SHOULD BE STORED IN A COOL DRY PLACE, BUT NEED TO BE WARMED-UP TO BE FLOWN. ATTEMPTING TO FLY A “COLD” PACK MIGHT CAUSE THE ESC TO SHUT THE MOTOR DOWN PRE-MATURELY AND CAUSE A CRASH!

WHY “LIPO” CUT-OFF ESC’S ARE NOT NECESSARY IN MOST* ELECTRIC SPORT MODEL AIRCRAFT



* EXCLUDES EXTREMELY OVERPOWERED AIRCRAFT, SAILPLANES AND LOWER POWER INDOOR MODELS

LI-POLY BATTERIES DO'S AND DON'TS

DO NOT – CHARGE LIPO'S WITH NICD/NIMH CHARGERS.

DO – CHARGE LIPO'S WITH APPROVED LITHIUM CHEMISTRY CHARGERS (MANY WILL ALSO CHARGE LITHIUM ION).

DO – CHARGE LIPO BATTERIES ON “BALANCING CHARGERS” FOR BEST LIFE AND MAXIMUM PERFORMANCE.

DO NOT – CHARGE LIPO'S UNATTENDED – EVEN WITH THE “BEST” CHARGERS OR IN FIREPROOF CONTAINERS. IT'S JUST NOT WORTH LOOSING A CAR OR A HOME!

DO – CHARGE LIPO'S IN A FIREPROOF CONTAINER AND A CLASS RATED FIRE EXTINGUISHER FOR CHEMICAL FIRES SHOULD BE NEARBY.

DO NOT – CHARGE OR DISCHARGE DAMAGED OR “OBVIOUSLY” BLOATED BATTERIES! IF A BATTERY “SMELLS SWEET” THE SOFT CASE MAY HAVE BEEN COMPROMISED. IT WOULD BE WISE NOT TO CHARGE A BATTERY IN THIS CONDITION.

DO – PLACE THE BATTERY IN SALT WATER FOR A FEW DAYS TO DRAIN THE BATTERY COMPLETELY, THEN THROW AWAY IN TRASH.

LI-POLY BATTERIES DO'S AND DON'TS

DO NOT – CHARGE LIPO'S THAT HAVE BEEN INVOLVED IN A CRASH UNTIL THEY HAVE BEEN CAREFULLY INSPECTED.

DO – PLACE THE SUSPECT PACK IN A FIREPROOF CONTAINER FOR MANY HOURS BEFORE HANDLING.

DO NOT – LEAVE LIPO'S PLUGGED INTO ESC'S! MOST ESC'S DRAW POWER FROM THE BATTERY FROM THE MOMENT THEY ARE PLUGGED INTO THE MOTOR BATTERY! A BATTERY LEFT PLUGGED INTO THE ESC CAN DRAIN WELL BELOW THE 2.6V/CELL IN JUST A DAY! THE SWITCH PROVIDED WITH SOME ESC'S SWITCHES ONLY POWER TO THE RX FROM THE ESC, NOT FROM THE BATTERY TO THE ESC!

DO – REMOVE THE BATTERY FROM THE MODEL AFTER EVERY FLIGHT OR AT LEAST DISCONNECT IT FROM THE ESC!

LI-POLY BATTERIES DO'S AND DON'TS

DO NOT – “CYCLE” LIPO BATTERIES. NOTHING IS TO BE GAINED BY “WASTING” A CYCLE.

DO – LEAVE LIPOS AT APPROX 3.6-3.7V/CELL WHEN STORING FOR PERIODS LONGER THAN A COUPLE OF WEEKS.

DO NOT – LEAVE AN “EXHAUSTED” (A BATTERY NO LONGER ABLE TO FLY THE MODEL) UNCHARGED FOR MORE THAN THE RIDE HOME!

DO – CHARGE A “SPENT” LIPO PACK TO AT LEAST 3.7V/CELL OR “FULL” IF IT IS GOING TO BE USED SHORTLY (WITHIN A WEEK OR TWO). THE “SELF-DISCHARGE” RATE OF A “SPENT” PACK IS MAGNITUDES HIGHER THAN A FULLY CHARGED ONE OR “50%” CHARGED ONE (APPROX 3.7V/CELL). A PACK THAT WAS DEPLETED AT THE FIELD AND NOT CHARGED AS SOON AS ONE GETS HOME COULD BE DAMAGED PERMENANTLY WITHIN A DAY OR TWO IF NOT CHARGED.

LI-POLY BATTERIES DO'S AND DON'TS

DO NOT – TRUST THE MANUFACTURERS DISCHARGE “C” RATE.

DO – TEST THE BATTERY ON THE BENCH OR IN YOUR MODEL WITH A “WATTMETER” AND RECORD THE VOLTAGE OF THE PACK UNDER THE LOAD YOU EXPECT TO FLY WITH (MAX THROTTLE).

THE VOLTAGE UNDER THIS LOAD SHOULD NOT BE BELOW 3.3V/CELL FOR “ACCEPTABLE” BATTERY EFFICIENCY. TRY TO HIT 3.5-3.7V/CELL FOR BEST LIFE.

THIS USUALLY TRANSLATES TO AROUND 12-15c FOR EVEN THE “BEST” 20C ADVERTISED CELLS. CONSISTANTLY ASKING “20C” FROM A 20C ADVERTISED PACK WILL SERIOUSLY REDUCE IT'S TOTAL NUMBER OF CHARGE/DISCHARGE CYLES (LIFE CYCLES).

DO NOT – FLY “COLD” LI-POLY BATTERIES. THEY WILL NOT DELIVER THE EXPECTED POWER WHEN THE TEMPERATURE FALLS BELOW 50F.

DO – WARM THEM ON YOUR DEFROSTER IN YOUR CAR AND DO NOT INSTALL THEM IN YOUR MODEL UNTIL YOU ARE READY TO FLY.

**MYTH – TOM HUNT KNOWS
EVERYTHING ABOUT LI-POLY
BATTERIES!**

**TRUTH – NOPE... JUST ENOUGH
TO BE DANGEROUS!**