

# ELDP Training

## Field Practical Topics – Simon Atkins

09.30 to 11.00 - Tuesday 17 June 2008

***Practical issues when working in adverse/remote environments including power options for cameras, laptops etc.***

### **Areas of discussion:**

- Types of environment? – tropical – rainforest – desert – polar/high altitude – remote – maritime - what are the key concerns?
- Practical issues typically concerned with 1 – personal (comfort, health etc) – 2 – equipment (use and maintenance). Prevention on both is the key!

### **Protection of Equipment - Cases/bags**

- Examples. Waterproof bags. Pelicases (NB not waterproof!). Backpacks etc
- Dry conditions – dust – sand
- Wet humid conditions
- Use of silica gel & Dampire Bags
- Avoid salt water in anything electrical

### **Maintenance & Repair of Equipment**

- Example kit
- Use of a volt meter

### **Power Options for Equipment**

- 1 - Mains – use of a regulator & surge protector. Check voltage.
- 2 - More batteries
- 3 – Car battery / portable power pack
- 4 – Generator. Check output.
- 5 - Solar panels. Pros and cons.
- 6 – An integrated 12Volt power system.

## **Web Resources**

**MAPLINS** - Excellent general purpose UK electrical outlet – both online and high street shops – use for misc cables, tapes, media, batteries, chargers etc etc

<http://www.maplin.co.uk/>

maplins 120W laptop power supply – L23AY

maplins laptop car adaptor - £14.00- N59AC

maplins Twin cigarette socket adaptor - £4.99 – L93AW

maplins 4 way cig socket adaptor -

<http://www.maplin.co.uk/Module.aspx?ModuleNo=42895&doy=17m9>

maplins 300 w invertor - £29.99 A17FG

maplins solar panels & charge controllers -

<http://www.maplin.co.uk/module.aspx?ModuleNo=97384&doy=17m9>

Regulated car power adaptor – (12v to eg 8v) -

<http://www.maplin.co.uk/Module.aspx?TabID=1&DOY=13m6&ModuleNo=37423&criteria=>

### **POWER PACKS – 40Ah**

<http://www.maplin.co.uk/module.aspx?ITAG=FAQ&ModuleNo=219491&doy=7m5&ma=Manchester%20-%20Oxford%20Road%20-%20Professional%2040ah%20Power%20Pack#faq>

**HAWKWOODS** - Specialist supplier and manufacturer of misc camera & sound accessories especially cables and chargers -

<http://www.hawkwoods.com/>

[www.hawkwoods.com](http://www.hawkwoods.com) – DV base mount adaptor – DV-BM1

**Reliable/efficient generators – HONDA – EU10i -**

<http://www.honda.co.uk/energy/GenHome.jsp>

**CASES** - Excellent online supplier of a huge range of equipment cases -

<http://www.tvcases.co.uk/acatalog/index.html>

**Silca Gel Bags** - Dampire Bags

[http://www.7zg.com/dzactive/product.php?product\\_id=21](http://www.7zg.com/dzactive/product.php?product_id=21)

**General cases/pouches & outdoor gear** – shops in central London

<http://www.cotswoldoutdoor.com>

<http://www.ellis-brigham.com>

<http://www.fieldandtrek.com/ft1/>

<http://www.snowandrock.com/>

**SOLAR PANELS AND REGULATORS** - – there are now a great many suppliers of solar equipment – here's a selection only

One of the best for all round kits in the UK is now - <http://www.selectsolar.co.uk/index.php>

For cheaper useful 12V products look at yachting websites – eg - <http://marinestore.co.uk/page/mrst/CTGY/solar-panels/>

Rugged solar panels – [www.uni-solar.com](http://www.uni-solar.com)

Invertors – [www.switchedmode.com](http://www.switchedmode.com)

12V SLA (sealed lead acid) rechargeable batteries –

<http://www.batterywholesale.com/battery-store/proddetail.html?prodID=396>

<http://www.solarenergyalliance.com/shop/gadgets/55p3.htm>

<http://www.selectsolar.co.uk/pics/pic01003SE02.php>

## SOLAR BATTERY CHARGER PERFORMANCE

### CHARGING LEVELS

Current from your Solar Battery Charger is proportional to sun intensity. Operating voltage varies with the charging voltage of the battery. Therefore charge rate and ampere-hour output from your Solar Battery Charger depend on sun intensity and battery voltage. Estimated battery charging values in ampere-hours per 7-day week for 12 volt batteries are given in the following Performance Chart. Ampere-hours is a typical measure of battery energy capacity at a given voltage. (Amps x Hrs. = Amp-Hrs.)

Model	Rated Peak Power/Amps	Amp-Hrs/Week by Region				
		A	B	C	D	E
FLX-5	5.0 Watts/ .3 Amperes	13	11	9	8	6
FLX-11	10.3 Watts/ .62 Amperes	26	23	20	16	13
FLX-32	32 Watts/ 1.94 Amperes	81	71	61	51	41

\* Based on Solar charger oriented toward noon sun during "summer" season over 7 days. Regions A through E correspond to average daily sun energy of 6 to 3 kWh/m<sup>2</sup>/day. Rated Peak Power is based on STC. Actual results may vary.

### AVAILABLE ENERGY

Available Energy from your Solar Battery Charger and battery system also depends on the efficiency of your battery and any controls or wiring that may be used. To estimate available energy over a week for use by 12 volt loads, multiply charging values by .75.

Compare Available Energy to energy demanded by loads over the same period. This will help you select the best size Solar Battery Charger for your use. You may wish to use more than one Solar Battery Charger or modify your load to meet your needs. Typical requirements of 12 volt loads are provided in the following table.

### SELECTED 12 VOLT LOADS

	Energy Demands		2 Day Weekend Load Energy Demand (Amp-hrs per 2 day)
	Load (Amps)	Typ. Usage (hrs./day)	
Cabin Light	1.0	3.0	6.0
Running Lights	3.0	2.0	12.0
Mast Light	1.0	4.0	8.0
Navigation (avg.)	1.0	1.0	2.0
VHF Radio (avg.)	1.5	1.0	3.0
CB Radio (avg.)	1.0	1.0	2.0
Loran	1.0	1.0	2.0
Depth Sounder	0.1	1.0	2.0
Water Pump	5.0	0.1	1.0
Stereo/Radio	1.0	2.0	4.0
Television	4.0	2.0	16.0
Vent Fan	1.0	4.0	8.0
Refrigeration	5.0	12.0	120.0

## SOLAR ENERGY MAPS

Solar energy varies around the world with latitude, season, local climate and geography. This map gives relative levels of solar energy for different locations.

Example: A boat or RV will be used every weekend. Expected loads are cabin lighting and running lights, vent fan, CB radio and a stereo/radio, totaling 32 Amp-hrs over each 2-day weekend. Located in Central Coastal California, Region B, a FLX-32 will provide approximately 71 Amp-hrs. per week of charging. Available Energy is .75 times 71 or 53 Amp-hrs. per week. This is more than the 32 Amp-hrs. required. Plan to use the extra charging to bring batteries up to full charge more rapidly or to increase operating time of selected loads.

