



Summary of Battery Characteristics: Comparison for a 28.8V									
Battery Type	Re or Non-recharge	Capacity/Weight	Capacity/Volume	Capacity/Dollar	Charge/Discharge Lim	Safety Issues	Transport	Availability	Comments
Lithium ion	recharge	.00566A-hr/gram	.0106 A-hr/cm3	.017 A-hr/dollar	Dual Charger \$160.00; 16 hours charge time; Need 2/28.8V 6.8 ahr battery	Consumer product with charge/discharge protections		Available from multiple sources	
Lithium polymer	recharge	.0063 A-hr/gram	.0113 A-hr/cm3	.0112 A-hr/dollar	\$280/charger; Need 2/28.8V 8 ahr battery; Fast charge: 1-2hr	Hobbyst applications; No experience		Available from multiple sources; factory in Las Vegas	
Lithium SO2	non-recharge	.0075 A-hr/gram	.0085 A-hr/cm3	.094 A-hr/dollar	Discharge curve shows >7 hours @ 2A rate @ 21degrees C	hazardous mat.	Ground transport or air freight	Stock in Florida	

<b>BELOW CLOUD PLANE</b>								
Requirements: 28.8V @ ~ 0.5 amp /hr								
Assumptions: 3 sets of rechargeable batteries for expedition								
<b>8 hour flight needs:(4 a-hr)</b>								
18 missions(15 + 20%)								
Battery Type	# of batteries series/parallel	Total # needed/flight	Total Weight	Total Volume	Total Cost	Total for 18(15+20%) missions	Charging System	Total for Expedition
<b>Li-ion</b>	4S	4	800g	424 cm3	\$264.00	\$792.00	\$320.00	\$1,112.00
Sony NP-F770								
7.4V@4.4 a-hr								
<b>Li-polymer</b>	2S	2	675g	420 cm3	\$420.00	\$1,260.00	\$560.00	\$1,820.00
Thunder Power								
#TP4000-4S2P								
14.8V@4 a-hr								
(2 chargers)								
<b>Li-SO2</b>	2S	2	600g	540 cm3	\$104.00	\$1,040.00	0	\$1,040.00
Saft#BA5588								
14V@4 a-hr								
<b>4 hour flight needs:(2 a-hr)</b>								
10 missions(8 + 20%)								
Li-ion	4S	4	400g	226 cm3	\$160.00	\$480.00	use above	\$480.00
Sony NP-F570								
7.4V@2.2 a-hr								
Li-polymer	2S	2	320g	162 cm3	\$220.00	\$660.00	use above	\$660.00
Thunder Power								
# TP2000-4S								
14.8V@2 a-hr								
Li-SO2	1	1	300g	270 cm3	\$52.00	\$520.00	0	\$520.00
Saft#BA5588								
14V@4 a-hr								



Summary for Expedition - 18 8 hour flights and 10 4 hour flights															
Li-ion	Li-polymer config 1						Li-polymer config 2						Li-SO2		
8 hour flights	Weight	Volume	Cost	Weight	Volume	Cost	Weight	Volume	Cost	Weight	Volume	Cost	Weight	Volume	Cost
Above Cloud	1.6Kg	848 cm3	\$2,224.00	1.2Kg	710 cm3	\$2,500.00	1.35Kg	833 cm3	\$3,040.00	1Kg	882 cm3	\$1,440.00			
In Cloud	2.4Kg	1272 cm3	\$3,336.00	2Kg	1325 cm3	\$4,560.00	2Kg	1325 cm3	\$4,560.00	1Kg	882 cm3	\$1,440.00			
Below Cloud	800g	424 cm3	\$1,112.00	675g	420 cm3	\$1,820.00	675g	420 cm3	\$1,820.00	600g	540 cm3	\$1,040.00			
sub-total			\$6,672.00			\$8,880.00			\$9,420.00						\$3,920.00
4 hour flights															
Above Cloud	800g	424 cm3	0	676g	416 cm3	\$1,260.00	676g	416 cm3	\$1,260.00	600g	540 cm3	\$1,040.00			
In Cloud	1.6Kg	848 cm3	0	1.35Kg	832 cm3	0	1.35Kg	832 cm3	0	600g	540 cm3	\$1,040.00			
Below Cloud	400g	226 cm3	\$480.00	320g	162 cm3	\$660.00	320g	162 cm3	\$660.00	300g	270 cm3	\$520.00			
sub-Total			\$480.00			\$1,920.00			\$1,920.00						\$2,600.00
Total			\$7,152.00	\$0.00	\$0.00	\$0.00	\$10,800.00		\$11,340.00						\$6,520.00