

- crossed out "Duration" = done and finalized
- crossed out name = not Relevant.

ICV?

different for center/side panel

s/c?

Paul is doing this

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ID	WBS	Task Name	Duration	Predecessors	Resource Names	
1	SA.2.A	documentation	1 day?			
2	SA.2.A.a	requirements	1 day?			
3	SA.2.A.b	ICD	1 day?			
4	SA.2.A.c	design documents	1 day?			
5	SA.2.A.d	test plans	1 day?			
6	SA.2.A.e	operations manual	1 day?			
7	SA.2.B	engineering	1 day?			
8	SA.2.B.a	design	1 day?			
9	SA.2.B.a.1	hardware	1 day?			
10	SA.2.B.a.1.1	central panels	1 day?		6	
11	SA.2.B.a.1.1.1	cell placement	1 day?			
12	SA.2.B.a.1.1.2	cell attachment	1 day?			
13	SA.2.B.a.1.1.3	sensor placements	1 day?		3 days, as ADs get sensors.	
14	SA.2.B.a.1.1.4	hinges - structures	1 day?			
15	SA.2.B.a.1.1.5	latch - structures	1 day?			
16	SA.2.B.a.1.1.6	schematic	1 day?		2 days	
17	SA.2.B.a.1.1.7	layout	1 day?		1 day	
18	SA.2.B.a.1.1.8	release system	1 day?			
19	SA.2.B.a.1.1.8.1	electrical design	1 day?			
20	SA.2.B.a.1.1.8.2	mechanical design	1 day?			
21	SA.2.B.a.1.1.9	mechanical structure - structures impact needed	1 day?		Part of	
22	SA.2.B.a.1.2	harnesses	1 day?		5	
23	SA.2.B.a.1.2.1	connector for ext power supplies	1 day?			
24	SA.2.B.a.1.2.2	route power into s/c	1 day?		1 day	
25	SA.2.B.a.1.2.3	route signals into s/c	1 day?		1 day	
26	SA.2.B.a.1.2.4	route turn-on switch wires	1 day?		2 days	
27	SA.2.B.a.1.2.5	select cable/connectors	1 day?			
28	SA.2.B.a.1.2.6	tie-downs	1 day?		1 day	
29	SA.2.B.a.1.3	max power point tracking	1 day?		0	
30	SA.2.B.a.1.3.1	part selection	1 day?			
31	SA.2.B.a.1.3.2	evaluate dev board	1 day?			
32	SA.2.B.a.1.3.3	schematic	1 day?			
33	SA.2.B.a.1.3.4	layout	1 day?			
34	SA.2.B.a.1.4	battery	1 day?		1	
35	SA.2.B.a.1.4.1	battery select	1 day?			
36	SA.2.B.a.1.4.2	heater select	1 day?			
37	SA.2.B.a.1.4.3	battery mounting	1 day?			
38	SA.2.B.a.1.4.4	battery electrical connection	1 day?		1 day - decide on weld/solder	
39	SA.2.B.a.1.4.5	schematic	1 day?			
40	SA.2.B.a.1.4.6	layout	1 day?			
41	SA.2.B.a.1.5	charging circuit	1 day?			
42	SA.2.B.a.1.5.1	select charge controller - mpp	1 day?			
43	SA.2.B.a.1.5.2	select charge monitors	1 day?			
44	SA.2.B.a.1.5.3	select power switches	1 day?			
45	SA.2.B.a.1.5.4	select sensors (T/I/V)	1 day?			
46	SA.2.B.a.1.5.5	schematic	1 day?		2 days	
47	SA.2.B.a.1.5.6	layout	1 day?		3 days	
48	SA.2.B.a.1.6	power control (msp430)	1 day?			
49	SA.2.B.a.1.6.1	select parts	1 day?			
50	SA.2.B.a.1.6.2	schematic	1 day?		Paul's	
51	SA.2.B.a.1.6.3	layout	1 day?		Footprints	
52	SA.2.B.a.1.7	power distribution	1 day?		5	
53	SA.2.B.a.1.7.1	select converters/regulators	1 day?			
54	SA.2.B.a.1.7.2	select sensors	1 day?			
55	SA.2.B.a.1.7.3	select switches	1 day?			
56	SA.2.B.a.1.7.4	schematic	1 day?		2 days	
57	SA.2.B.a.1.7.5	layout	1 day?		2 days	
58	SA.2.B.a.2	software	1 day?		6	
59	SA.2.B.a.2.1	plan operating system	1 day?			
60	SA.2.B.a.2.2	plan control of battery charging	1 day?		3 days	
61	SA.2.B.a.2.3	plan control of subsystem power	1 day?		1 day	
62	SA.2.B.a.2.4	plan reporting of diagnostics	1 day?		1 day	
63	SA.2.B.a.2.5	plan control of battery heater	1 day?			
64	SA.2.B.a.2.6	plan control of panel deploy	1 day?			
65	SA.2.B.a.3	test equip	1 day?		10	
66	SA.2.B.a.3.1	dummy loads	1 day?		1 day	

select cheap Solar Panels

Backplane?

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ID	WBS	Task Name	Duration	Predecessors	Resource Names
67	SA.2.B.a.3.2	testing backplane	1 day?		
68	SA.2.B.a.3.3	solar input substitute	1 day?		
69	SA.2.B.a.3.4	for evaluating solar cells	1 day?	2 days	
70	SA.2.B.a.3.5	for evaluating power quality	1 day?	1 day	
71	SA.2.B.a.3.6	for evaluating release mechanism	1 day?		
72	SA.2.B.a.3.7	for evaluating MSP430 stability	1 day?		
73	SA.2.B.a.3.8	for evaluating battery charge/discharge	1 day?	2 days	
74	SA.2.B.a.3.9	vibration fixture	1 day?	2 days	
75	SA.2.B.a.3.10	thermal test fixture	1 day?	2 days	
76	SA.2.B.a.3.11	EMI test fixture	1 day?		
77	SA.2.B.b	build	1 day?		
78	SA.2.B.b.1	hardware	1 day?		2-0
79	SA.2.B.b.1.1	order cells	1 day?	1 day	
80	SA.2.B.b.1.2	order batteries	1 day?	1 day	
81	SA.2.B.b.1.3	order sensor parts	1 day?	2 days	
82	SA.2.B.b.1.4	order power control parts	1 day?	1 day	
83	SA.2.B.b.1.5	order power distribution parts	1 day?	1 day	
84	SA.2.B.b.1.6	order power conversion parts	1 day?	3 days	
85	SA.2.B.b.1.7	order deploy switches	1 day?		
86	SA.2.B.b.1.8	prototype a panel (cheap/dummy cells)	1 day?	5 days	
87	SA.2.B.b.1.9	prototype hinges/latch/release	1 day?		
88	SA.2.B.b.1.10	order 3 panels	1 day?	1 day	
89	SA.2.B.b.1.11	load panel electronics	1 day?	1 day	
90	SA.2.B.b.1.12	install solar cells	1 day?	1 day	
91	SA.2.B.b.1.13	assemble/fit check a panel	1 day?	1 day	
92	SA.2.B.b.1.14	order internal board(s)	1 day?	1 day	
93	SA.2.B.b.1.15	load boards	1 day?	2 days	
94	SA.2.B.b.1.16	construct harnesses	1 day?	2 days	
95	SA.2.B.b.2	software	1 day?		
96	SA.2.B.b.2.1	operating system	1 day?		
97	SA.2.B.b.2.2	control battery charging	1 day?		
98	SA.2.B.b.2.3	control subsystem power	1 day?		
99	SA.2.B.b.2.4	report diagnostics	1 day?		
100	SA.2.B.b.2.5	control battery heater	1 day?		
101	SA.2.B.b.2.6	interface to CAN	1 day?		
102	SA.2.B.b.2.7	control panel deploy	1 day?		
103	SA.2.B.b.3	test equip	1 day?		7
104	SA.2.B.b.3.1	software for solar cell monitoring	1 day?		
105	SA.2.B.b.3.2	build test backplane and harnesses	1 day?		
106	SA.2.B.b.3.3	build solar cell test system	1 day?	2	
107	SA.2.B.b.3.4	build battery test system	1 day?		
108	SA.2.B.b.3.5	build release test fixture	1 day?		
109	SA.2.B.b.3.6	vibration fixture	1 day?	2	
110	SA.2.B.b.3.7	thermal test fixture	1 day?	3	
111	SA.2.B.b.3.8	EMI test fixture	1 day?		
112	SA.2.B.c	test	1 day?		
113	SA.2.B.c.1	hardware	1 day?		
114	SA.2.B.c.1.1	test solar cell mounting	1 day?		3
115	SA.2.B.c.1.1.1	thermal	1 day?	1	
116	SA.2.B.c.1.1.2	vibration	1 day?	1	
117	SA.2.B.c.1.1.3	vacuum	1 day?	1	
118	SA.2.B.c.1.2	verify cell mounting	1 day?		
119	SA.2.B.c.1.2.1	thermal	1 day?	?	
120	SA.2.B.c.1.2.2	vibration	1 day?	?	
121	SA.2.B.c.1.2.3	vacuum	1 day?		
122	SA.2.B.c.1.3	functional testing	1 day?		12
123	SA.2.B.c.1.3.1	mechanism reliability	1 day?		
124	SA.2.B.c.1.3.2	panel power collection	1 day?	1	
125	SA.2.B.c.1.3.3	max power point tracking	1 day?	1	
126	SA.2.B.c.1.3.4	battery charging	1 day?	2	
127	SA.2.B.c.1.3.5	sensing functions	1 day?	3	
128	SA.2.B.c.1.3.6	control functions	1 day?	2	
129	SA.2.B.c.1.3.7	distribution functions	1 day?	2	
130	SA.2.B.c.1.3.8	heating function	1 day?	1	
131	SA.2.B.c.1.4	environmental testing	1 day?		15
132	SA.2.B.c.1.4.1	vibration	1 day?	2	

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ID	WBS	Task Name	Duration	Predecessors	Resource Names	
133	SA.2.B.c.1.4.2	vacuum	1 day?	2		
134	SA.2.B.c.1.4.3	thermal	1 day?	2		
135	SA.2.B.c.1.4.4	contamination - unsolved how	1 day?	1		
136	SA.2.B.c.1.4.5	EMI/EMC	1 day?	1		
137	SA.2.B.c.1.4.6	lifetime	1 day?	5		
138	SA.2.B.c.2	software	1 day?			
139	SA.2.B.c.2.1	evaluate resource usage	1 day?			
140	SA.2.B.c.2.2	evaluate stability	1 day?			
141	SA.2.B.c.2.3	evaluate timing	1 day?			
142	SA.2.B.c.3	verify operating modes	1 day?			
143	SA.2.B.c.4	verify integrated s/c function	1 day?			
144	SA.2.C	flight	1 day?			
145	SA.2.C.a	design	1 day?			
146	SA.2.C.a.1	hardware	1 day?			13
147	SA.2.C.a.1.1	review materials	1 day?	1		
148	SA.2.C.a.1.2	review parts reliability	1 day?	1		
149	SA.2.C.a.1.3	review parts space compatibility	1 day?	1		
150	SA.2.C.a.1.4	mods to structure	1 day?	2		
151	SA.2.C.a.1.5	mods to mechanisms	1 day?	3		
152	SA.2.C.a.1.6	layout changes	1 day?	5		
153	SA.2.C.a.2	software	1 day?			
154	SA.2.C.a.2.1	power system control (flight hardware)	1 day?			
155	SA.2.C.a.2.2	mode behavior (deploy, safe, eclipse, etc)	1 day?			
156	SA.2.C.a.2.3	migrate test->flight configuration	1 day?			
157	SA.2.C.b	build	1 day?			
158	SA.2.C.b.1	hardware	1 day?			15
159	SA.2.C.b.1.1	order flight batteries	1 day?			
160	SA.2.C.b.1.2	order flight cells	1 day?			
161	SA.2.C.b.1.3	order flight electronics	1 day?			
162	SA.2.C.b.1.4	order battery charge board	1 day?			
163	SA.2.C.b.1.5	order power distribution board	1 day?			
164	SA.2.C.b.1.6	order new hardware	1 day?			
165	SA.2.C.b.1.7	clean all hardware	1 day?			
166	SA.2.C.b.1.8	fabricate structure parts - no unique parts	1 day?			
167	SA.2.C.b.1.9	apply surface treatments	1 day?			
168	SA.2.C.b.1.10	clean machined parts	1 day?			
169	SA.2.C.b.1.11	load panels	1 day?			
170	SA.2.C.b.1.12	load internal boards	1 day?			
171	SA.2.C.b.1.13	clean panels/boards	1 day?			
172	SA.2.C.b.1.14	conformal coat boards	1 day?			
173	SA.2.C.b.1.15	assemble/fit check the structure	1 day?			
174	SA.2.C.b.1.16	construct harnesses	1 day?			
175	SA.2.C.b.1.17	build release mechanism	1 day?			
176	SA.2.C.b.2	software	1 day?			
177	SA.2.C.b.2.1	clean up the flight code	1 day?			
178	SA.2.C.b.2.2	implement design changes	1 day?			
179	SA.2.C.c	test	1 day?			
180	SA.2.C.c.1	hardware	1 day?			
181	SA.2.C.c.1.1	functional tests	1 day?			10
182	SA.2.C.c.1.1.1	mechanism reliability	1 day?	1		
183	SA.2.C.c.1.1.2	charge functions	1 day?	2		
184	SA.2.C.c.1.1.3	control functions	1 day?	2		
185	SA.2.C.c.1.1.4	sense functions	1 day?	2		
186	SA.2.C.c.1.1.5	distribution functions	1 day?	2		
187	SA.2.C.c.1.1.6	s/c mode functions	1 day?	1		
188	SA.2.C.c.1.2	environmental tests	1 day?			
189	SA.2.C.c.1.2.1	vibration	1 day?	4		
190	SA.2.C.c.1.2.2	vacuum	1 day?	2		
191	SA.2.C.c.1.2.3	thermal	1 day?	2		
192	SA.2.C.c.1.2.4	EMI/EMC	1 day?	3		
193	SA.2.C.c.1.2.5	lifetime	1 day?	5		
194	SA.2.C.c.2	software	1 day?			
195	SA.2.C.c.2.1	long term testing	1 day?			
196	SA.2.C.c.3	verify operating modes	1 day?			
197	SA.2.C.c.4	verify integrated s/c function	1 day?			
198	SA.2.D	integration	1 day?			13

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ID	⑥	WBS	Task Name	Duration	Predecessors	Resource Names
199		SA.2.D.a	mechanical integration into launcher	1 day?	2	
200		SA.2.D.b	functional test sequence	1 day?	3	
201		SA.2.D.c	environmental test sequence	1 day?	3	
202		SA.2.D.d	modes and long-term testing	1 day?	5	