EL TORBELLINO

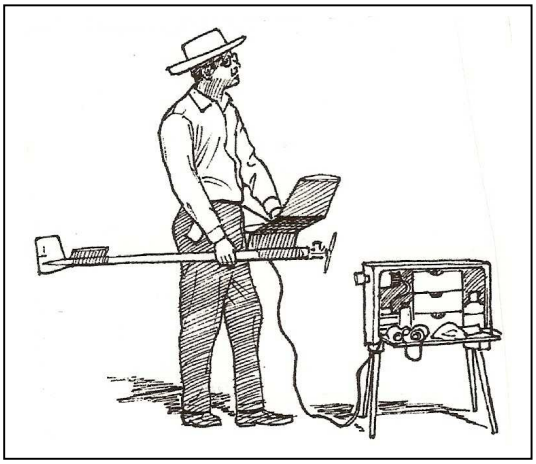
NEWSLETTER OF SAN DIEGO ORBITEERS FREE FLIGHT CLUB

JUNE 2014

The Prez's Corner *– Don Bartick*

The Dual-clubs FF Bonanza is now in the can. It was a spectacular weekend. Starting the practice day Friday through Sunday the weather was beautiful for Free Flight. The only problem was low turnout, especially ORBITEERS. Those that did attend claimed they had a wonderful time. Tell me, what other contest offers a Saturday noontime break with an ice cream social and then later on a pot luck dinner? I'm very thankful for wife Arline's major help. Otherwise, it would be impossible. Sure can't count on club members to help run our own annual. I'm thankful that the Co-host Fresno MAC had a larger turnout and found time to help us when needed. This is still a major contest for Southern California and I will put it on the best I can as long as I can. Look for the contest report in this ET. I don't feel like continuing this column so that's it for now.

Remember: "You don't learn to walk following rules. You learn by doing and falling over" –Richard Branson



2014 ORBITEER FLYING SCHEDULE

July 4 - Walt Mooney Annual Scale Contest

July 20 - P-30, Power, & Glider

Aug 17 - Nos. Rubber, Power, & Glider

Aug 23/24 FAC Scale Contest, (Two of Three)*

Sept 21 - Coupe, Power, & Glider

Sept US FF Championships, Lost Hills

Oct 12 - P-30, Power, & Glider

Oct SW FAI Champs*, Boulder City, NV

2014 INDOOR FLYING SCHEDULE

July 6 - A-6, Phantom Flash*, No-Cal*

Aug 3 - Phantom Flash, No-Cal*

Sept 7 - Penny Plane, Phn. Flsh*, No-Cal*

Oct 5 - A-6, Phantom Flash*, No-Cal*

Nov 2 - Phantom Flash, No-Cal*

Dec 7 - Penny Plane, Phn. Flsh*, No-Cal*

***Non-ORBITEER Points Event**

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ORBITEERS MEMBERSHIP DUES

Annual Membership - $15
Lifetime Membership - $250
Non-Member Newsletter Subscription - $15
Junior Members 16 years old or younger - Free

Submit Dues to Club Treasurer:
Howard Haupt
3860 Ecochee Avenue
San Diego, CA 92117-4622

THE FINE PRINT THE FINE PRINT

El Torbellino is the official newsletter of the San Diego Orbiteers, an Academy of Model Aeronautics (AMA) Charter Club (#1113) and a California not for Profit Corporation. This newsletter is sent monthly to all paid members, selected exchange and magazine editors. Non-Members may subscribe at $15.00 per year within the U.S.A., offshore price will be adjusted to reflect the postage required. Materials from El Torbellino may be reproduced on an unlimited basis by other publications, but proper credit is requested.

ORBITEER WEB SITE

www.SanDiegoOrbiteers.com

Webmaster: Bob Beecroft

MONEY MATTERS - H.Haupt

05/15/14 thru 06/10/14

Income:

Dues (1)	15.00
Annual Proceeds	803.50

Expenses:

April Newsletter	6.76

Current Balance ….... $1,294.10

SAN DIEGO ORBITEERS AND SCALE STAFFEL

Fourth *of* July Contest

Event

Otay Mesa Flying Field
July 4, 2014
8 a.m. – 11:30 a.m. (Prompt!)
Hot dogs and associated goodies to follow! (Yes, watermelon, too!)

Fee

$5 for all 3 events.

Awards Presentation

Noon on July 4th
Must be present to receive award

Events

Peanut Scale
Bostonian/Embryo Endurance
2x Peanut Scale Walter Mooney Plan

Contest Director

John Hutchison
(619) 303-0785

Judging and Rules

General rules apply to all contestants and airplanes
All contestants MUST wear a real tie! (no paper, fake, clip on ties) No exceptions!
All models MUST have an American flag attached! No exceptions!
Awards to third place in all categories
Contest director to determine categories

Peanut Scale Rules, $100 for first place

Peanut Scale is open to any design
Peanut plans must be presented with model
Walter Mooney style judging
Total of three flights, flight => 20 seconds

Bostonian Rules

Hand launch flights
Total of three flights, flight => 20 seconds

Embryo Endurance Rules

Walt Mooney style judging
FAC bonus points: 1 point for 3-dimensional exhaust, 3 points for 3-dimensional wheel pants, 5 points for windshield or windscreen. Maximum of 9 points.
Total of three flights, flight => 20 seconds

2x Peanut Scale Rules, $100 for first place

2x Peanut Scale must be a Walter Mooney design only
Wing span must be twice the published wing span
Plans must be presented with the model
Rubber power only
Walt Mooney style judging
Ineligible models: Found Centennial, Found FBA-2A, and Aeronca Defender

Scale Judging

"Mooney" judging rules will be used. Considering all factors including FAC bonus points, judge will rank all planes in each category from first to last, scoring them as 1 for first place, 2 for second place and so on.

Flight Scoring

Flight scoring will be the combined time from the three official flights (=> 20 seconds) hand launched attempts. Max individual flight time: 120 seconds.
Flyers will be placed in rank order (1,2, etc) from first to last place based on decreasing average flight scores, from max to min.

Total Scoring

Total scoring for each entry will be the sum of it's "scale" and "flight" places.
The lowest total wins first place, second lowest wins second place and so on.

Results of the Dual Clubs Free Flight Bonanza

A National Cup Event

May 17-18, 2014

LOST HILLS, CA

Don A. Bartick, San Diego Orbiteers, Event Coordinator
Don Bartick, San Diego Orbiteers, Contest Director
Doss Porter., Fresno GMC, Contest Director

The Dual Club Free Flight Bonanza is the joint annuals for the San Diego Orbiteers and Fresno Gas Model Clubs. This was the 56th and 75th annuals respectively for the clubs. Having dual club participation in waning attendance significantly reduces the overhead to put on a successful event. It has worked well over the past 13 years. We had fantastic weather throughout the contest including the day before used for practice. Temperature on the field went from the mid 50's to low 90's for each of the 2 contest days.

The scheduled Saturday noontime 1-hour break from flying for lunch and the now famous Ice Cream Social worked out especially well as in the past. Leftover ice cream and condiments are giving to the local Lost Hills Fire Department. The new tradition of having a Saturday night potluck feast went off very well. Dan Heinrich, is the organizer and the main course sirloin hamburgers and hotdogs were grilled to perfection. Participants are asked to bring a side dish or desert.

Unfortunately, the attendance continues to decline. Not like the good ole days. The FF community is dwindling. Add to that the economy and fuel prices and you get what you get. There seems to be a few new comers to the hobby. Also, we experienced a few thinking about returning to the hobby. Maybe there's hope. Time will tell.

The Fresno GMC again brought an incredible amount of merchandise for their drawing. Every event entry that the Fresno club sponsored was given a raffle ticket (up to 3). Don't know of anyone that went away empty handed.

Special thanks to wife Arline, who spent a lot of time at the CD table registering folks and recording times. This gave me an opportunity to participate in the competition. She also handled the camera duty. Her shots from 100 feet away came out great.

Special thank you to Jim Hurst for sponsoring the Tom Carman Memorial event. This event had cash awards provided by Jim.

Thirty (30) senior/open and 4 junior flyers registered for the meet. These flyers participated in 104 events. We had 4 separate events for the juniors. This year, we provided 8" diameter plaques made of maple with laser etched artwork for participation awards. They were given out to each registered contestant. We then awarded laser etched gold, silver and bronze placards for event placement. The placards could then be mounted on the participation award.

Highlight of the contest: The most contested event this year was A Nostalgia Gas. We had 8 flyers slugging it out in the event with Dick Nelson taking the gold. Also, to be noticed is the participation in E-36 A/B combined. We had 7 flyers going for it with Mike Callas taking the gold.

Until next year, have many delightful FF moments. *Don Bartick, Ramona, CA*

For the record . . . .

DAWN P-30 (3)

Place	Name	Seconds
1	Clint Brooks	149
2	Don Bartick	135
3	Bill Gannon	121

P-30 (4)

Place	Name	Seconds
1	Clint Brooks	447
2	Don Bartick	432
3	Bill Gannon	350

DAWN MULVIHILL (3)

Place	Name	Seconds
1	Carl Redlin	850
2	Bill Gannon	268
3	Don Bartick	220

Mulvihill (3)

Place	Name	Seconds
1	Don Bartick	777
2	Bill Gannon	652
3	Mason Mayer (jr)	102

½ A Gas (5)

Place	Name	Seconds
1	Terry Kerger	540
2	Don Bartick	526
3	Matt Kruse	510

A Gas (5)

Place	Name	Seconds
1	Ron Thomas	980
2	Ken Kaiser	720
3	Terry Thorkildsen	526

B Gas (5)

Place	Name	Seconds
1	Terry Thorkildsen	985
2	Ron Thomas	883
3	Jeff Carman	481

C/D Gas (6)

Place	Name	Seconds
1	Terry Ellington	643
2	Jeff Carman	503
3	Terry Thorkildsen	478

Hand Launch Glider (3)

Place	Name	Seconds
1	Stan Buddenbohn	418
2	Lee Hines	302
3	Taron Malkhasyan	283

Catapult Glider, (3)

Place	Name	Seconds
1	Stan Buddenbohn	480
2	Lee Hines	384
3	Matt Kruse	78

Tom Carman Memorial (3)

Place	Name	Seconds
1	Jeff Carmen	1163
2	Ken Kaiser	540
3	Ray Peel	180

Classic Towline (1)

Place	Name	Seconds
1	Ted Firster	324

Early ½ A Nostalgia (2)

Place	Name	Seconds
1	Glen Schneider	527
2	Jeff Carman	258

¼ A Nostalgia (1)

Place	Name	Seconds
1	Glen Schneider	596

A Nostalgia (8)

Place	Name	Seconds
1	Dick Nelson	540
2	Glenn Schneider	531
3	Ken Kaiser	513

B Nostalgia (3)

Place	Name	Seconds
1	Glenn Schneider	540
2	Ron Thomas	540
3	Don McNamee	480

1st & 2nd decided by coin toss

C Nostalgia (5)

Place	Name	Seconds
1	Glenn Schneider	1080
2	Ray Peel	589
3	Dick Nelson	560

NOS Rubber/Wakefield (1)

Place	Name	Seconds
1	Dan Keegan	638

1/2A Classic (3)

Place	Name	Seconds
1	Brandon Martin	540
2	Terry Ellington	354
3	Eric Strengell	307

½ A Texaco (1)

Place	Name	Seconds
1	Dick Nelson	13:24

Texaco (2)

Place	Name	Seconds
1	Jeff Carmen	7:08
2	Dick Nelson	3:12

Sm OT Rubber Stick (1)

Place	Name	Seconds
1	Ted Firster	535

Sm OT Rubber Cabin (2)

Place	Name	Seconds
1	Carl Redlin	1020
2	Dan Keegan	315

Lg. OT Rubber Stick (4)

Place	Name	Seconds
1	Carl Redlin	1020
2	Dan Keegan	540
3	Bud Romak	144

LG. OT Rubber Cabin (1)

Place	Name	Seconds
1	Dan Keegan	261

OT A Pylon (1)

Place	Name	Seconds
1	Phil Romney	314

OT B/C Pylon (3)

Place	Name	Seconds
1	Jeff Carmen	310
2	Bud Romak	273
3	Dick Nelson	147

OT A Fuselage (1)

Place	Name	Seconds
1	Eric Strengell	826

OT B/C Fuselage (3)

Place	Name	Seconds
1	Dick Nelson	540
2	Carl Redlin	497
3	Bud Romak	360

OT .020 Replica (1)

Place	Name	Seconds
1	Jeff Carmen	492

E-36/A/B comb (7)

Place	Name	Seconds
1	Mike Callas	643
2	Clint Brooks	553
3	Matt Gewain	352

FAI Vintage Power (3)

Place	Name	Seconds
1	Ken Kaiser	1080
2	Don Kaiser	1021
3	Glenn Schneider	781

Gollywock Mass Launch(2)

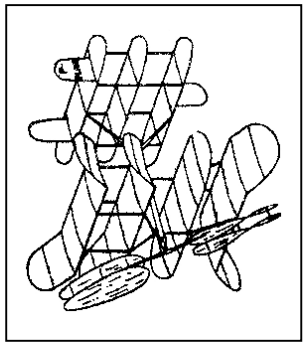
Place	Name	Seconds
1	Bud Romak	350
2	Ted Firster	100

Tom Boy (1)

Place	Name	Seconds
1	Brad Lovine	529

F1H Towline (1)

Place	Name	Seconds
1	Lee Hines	395



June 1, 2014

Event: Limited Penny Plane (7 entries) — FLIGHT TIMES OR HEAT ROUNDS FOR ML EVENTS (best 2 of 5)

CONTESTANT'S FULL NAME	1	2	3	4	5	6	TOTAL	PLACE
Mike Jester	209	178	74	132	261		470	1
Greg Hutchison	236	75	74	218	8		454	2
John Hutchison	93	208	164	65	72		372	3
Mark Chomyn	53	79	43	108	154		262	4
Don Bartick	30	155	37	49	98		253	5
Richard Wood	6	114	86				200	6
Larry Miller	107	3					110	7

Event: Phantom Flash (5 entries) — FLIGHT TIMES OR HEAT ROUNDS FOR ML EVENTS (best 3 of 6)

CONTESTANT'S FULL NAME	1	2	3	4	5	6	TOTAL	PLACE
Richard Wood	26	67	58	68	80		215	1
Don Bartick	17	30	35	27	46	56	137	2
Greg Hutchison	56	29	34	45	36	13	137	3
Mike Jester	14	46	47	25	22	28	121	4
William Scott	39	22	27	43	25	23	109	5
Mark Chomyn	32	35	31	39	33	30	107	6
Nick Panousis	3	10	3	6	31	4	41	7

Endurance Challenge

Solar-powered around-world attempt will test pilot physiology as much as aircraft technology

Thierry Dubois Dubendorf, Switzerland

Unveiled earlier this month in Payerne, Switzerland, the Solar Impulse 2 is scheduled to quickly proceed to flight testing ahead of its solar-powered around-the-world attempt next year. First flight is planned for mid-May, and circumnavigation is required to begin in March 2015 to avoid the monsoon season.

Testing will be relatively unusual, by aviation standards, as only part of the flight envelope will be explored. Project leaders Bertrand Piccard and Andre Borschberg will examine just the domain useful for their planned intercontinental flights in 2015. "If we were to explore the entire envelope, we would need an extra year, which would be too long for us," Borschberg says.

What the testing may explore more exhaustively is the pilot's "alertness envelope." Taking turns piloting the single-seat aircraft on flights lasting up to six days, Piccard and Borschberg do not want to take a chance with sleep deprivation, the effects of repeated, major altitude variations or the management of mental concentration.

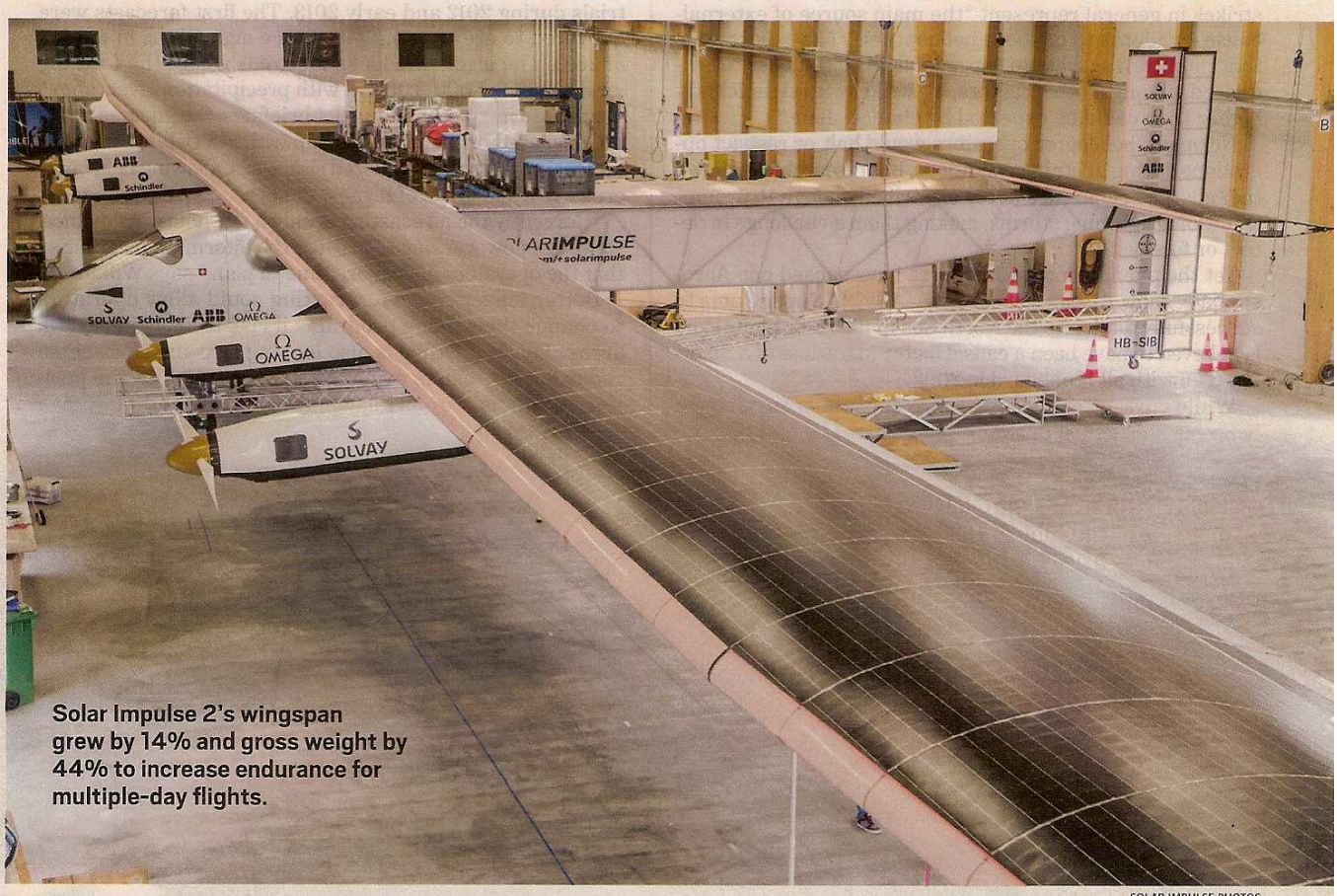
In May, professional test pilot Markus Scherdel will conduct the first flight tests from Payerne in calm-air conditions. In a second phase, Borschberg will focus on understanding the aircraft's behavior in windy or turbulent conditions. He will begin in Switzerland and then fly from the starting point of the around-the-world journey, probably in the Persian Gulf region.

This means the pilots will still be discovering parts of the flight envelope during the journey. Flying HB-SIA, Solar Impulse's prototype, across the U.S. in 2013, Borschberg had to invent an approach pattern at Dallas/Fort Worth International Airport. "When abeam the runway threshold, headwind speed was equal to the aircraft's maximum airspeed," he says. The solution was a slideslip approach.

Flight testing should take less time with the new aircraft. With a wing span of 208 ft. and a gross weight of just 3,530 lb., HB-SIA was entering a new domain in terms of wing loading for an aircraft, below 1.8 psf.—equivalent to that of a paraglider. As a result, beginning in 2010, flight testing progressed in small steps.

Although Solar Impulse 2 has an increased wingspan of 236 ft. and a higher gross weight of 5,070 lb., its behavior is expected to be close to that of its predecessor, so the progression should be faster. "But we will not miss any step. We don't want to be complacent," Borschberg explains.

To provide greater energy reserves, so Solar Impulse 2 can fly through cloudy skies, the larger aircraft has 17,000 solar cells on the wing and tailplane, up from just under 12,000 on HB-SIA. The energy density of the



Solar Impulse 2's wingspan grew by 14% and gross weight by 44% to increase endurance for multiple-day flights.

SOLAR IMPULSE PHOTOS

four lithium-polymer battery packs is increased to 260 kw/kg from 240 kw/kg, and the efficiency of the four 17.5-hp brushless electric motors is raised to 94%. The engines are closer together, to reduce thrust asymmetry in the event of a failure, Piccard says.

After taxiing trials, the first flight will probably last around an hour.

One significant design change is in the landing gear, which has two outriggers that retract rather than dropping off. These provide more autonomy for taxiing in case the ground assistants are not on site.

With Solar Impulse 2, airframe fatigue life will no longer be an issue, its designers predict. The aircraft has a life limit of around 2,000 hr., while the around-the-world flights (added to the flight tests) will total around 500 hr. HB-SIA has used almost all of its 500-hr. life.

Solar Impulse 2's test phase has already started on the ground, with vibration testing from March 24 to April 2. German aerospace research center DLR installed 12 electrodynamic shakers and 200 acceleration sensors. DLR team leader Yves Govers says the aircraft has unusually low eigenfrequencies, or natural frequencies. "The aircraft is very light, but very large, so eigenfrequencies are below 1 Hz," he says.

Computational models for aeroelasticity are available, but Solar Impulse 2 has peculiarities they do not take into account. The photovoltaic cells and their fasteners influence the natural frequencies, Borschberg says. Ground vibration tests will verify that observed eigenfrequencies are the same as those calculated, to ensure vibrations caused by aerodynamic forces stay away from Solar Impulse 2's natural frequencies.

The pilot's alertness envelope is being explored by Piccard and Borschberg. Thanks to simulated 72-hr. missions performed on the ground in 2012-13, they have found a suitable rhythm for periods of being awake and asleep. Both have validated polyphasic sleep, involving around 10 20-min. naps over a 24-hr. period. "Twenty minutes is short enough to safely disengage from the aircraft and long enough for a rest," Borschberg explains.

To induce sleep, psychiatrist Piccard uses self-hypnosis. Borschberg relies on meditation and breathing techniques that "relax the mind, but keep the body awake." Another reason for using polyphasic sleep is the short time it takes to be fully awake again. During deviations from usual attitudes, a vibrating sleeve warns the pilot early enough for him to react.

The sleeve is activated by the monitoring and alerting system (MAS), which Borschberg describes as a "virtual co-pilot." The MAS oversees the aircraft, the pilot and a stability augmentation system (SAS), which will alleviate pilot workload and allow sleep. In case of a deviation from normal attitudes, the MAS—which Borschberg emphasizes uses sources of information different from the SAS—warns the pilot early enough to react, even when taking a nap.

A new seat will help with the physical challenges. Designed by Lantal, a specialist in first-class covers, the new seat uses the company's expertise in inflatable cushions, Borschberg says. The seats many cushions combine fine adaptation to body shape with lightness.

The larger cockpit volume, at 3.8 cu. meters (about three times that of HB-SIA's cockpit), enables the seat to recline to a full-flat position. This allows the pilot to do more exercise. "This is very important for blood circulation, keeping awake and stimulating your organs," Borschberg says, adding "I want to arrive in a good shape."

As for managing tiredness, the answer may be two-pronged: mind and body. For the pilot's mind, "one good approach is to avoid thinking too much of the objective, avoid counting down the hours," Borschberg says. Concentrating on the current moment is better, he stresses.

Staying focused is a challenge. It is not a question of routine or boredom when flying at slow speed above the ocean. "A flight is an ongoing discovery of the aircraft, the environment and ourselves," Borschberg notes. Rather, maintaining focus is about putting one's attention on the present, even in unfavorable circumstances.

Borschberg experienced a baptism by fire last summer when flying HB-SIA from Washington to New York. Some fabric under the left wing was torn off and the mission control center warned "we don't understand why the wing has not broken apart yet."

The single-pilot cabin is roomier, and engines are closer together to reduce thrust asymmetry if one powerplant fails.

Borschberg became upset rather than staying calm, but he remembered he had been talking to journalists that morning about the importance of living in the moment. "So let's see if I can act consistently, I thought." He therefore rehearsed the bail-out procedure. This calmed him down so he could fly the aircraft normally to destinations, landing safely with no further degradation.

As for the pilot's body, Solar Impulse is exploring uncharted territory. Just before the unveiling on April 9, Borschberg spent three days and nights in a polyphasic sleep rhythm in the Alps, at about 10,000 ft. altitude. Immediately afterward, he spent another day in a decompression chamber. "The idea is to study the effect of low pressure on a tired body, especially on oxygen consumption," he says. Properly estimating the pilot's oxygen consumption in the unpressurized cockpit is critical. "At 30,000 feet, if you don't have oxygen, it just takes 30 seconds to become unconscious."

Little is known about how the human body reacts to a prolonged series of major variations in altitude, but the changes are important for Solar Impulse. By day, the aircraft converts solar energy into electricity and altitude, climbing to 28,000 ft. then gradually descending to 10,000 ft. at night as it flies on battery power.

Solar Impulse 2 will be faster than the prototype, capable of speeds up to 92 kt., but will have to slow to 25 kt. at night to conserve battery power. Crossing the Pacific against the trade winds, this means the aircraft could be "flying backward" at night, says Piccard, extending flight time.

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WHAT'S HAPPENING - JUNE 2014

June 22 - **Orbiteer Outdoor Monthly,** Otay Mesa, 8:00 am,
Feature Event: Coupe Other Events: Power & Glider

June 25 - Board of Directors Meeting, Mike Jesters Home, 7:00 pm.

JULY 2014

July 4 - Fourth of July Scale Contest, Otay Mesa, 8:00 am,
Peanut Scale, Bostonian/Embryo Endurance & 2x Peanut Scale Walt Mooney Plan
(See enclose flyer for all the details)

July 6 - **Indoor Flying**, Grossmont College (Upper Gym), 7:30 am to 11:30 am.
Feature Event: **A-6** Other Event: **Phantom Flash & No-Cal Scale**

July 20 - **Orbiteer Outdoor Monthly,** Otay Mesa, 8:00 am,
Feature Event: P-30 Other Events: Power & Glider