



Issue Number 42

June / July 2010

Hello again Aviators.

Before I start, I have decided to combine June and July's newsletter as I was waiting for someone to report on XLTA6. Unfortunately this didn't appear, so now I'm publishing anyway.

On Friday 28th May, at around 5am a 36year old man from Raleigh North Carolina Took off from a Kent gliding airfield to fly the English Channel equipped with 54 cluster balloons. As the day progressed, the coverage of this remarkable flight gained exposure with Sky TV covering the mission.

By the evening, Jonathan Trappe was a household name on every major channel having successfully negotiated the first ever cross water challenge in a cluster balloon and more importantly conveying fantastic pr for ballooning as sport.

I have had the pleasure of knowing Jonathan for a short while, but have witnessed his attention to detail and even sat in a French cabbage field having completed his onerous task still had the capacity to enthral future generations with his witty responses to questions and yet instilling in the public his attention to risk limitation and compliance to regulatory needs and skills involved with being a pilot.

UNITED STATES OF AMERICA DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION SPECIAL AIRWORTHINESS CERTIFICATE			
A	CATEGORY/DESIGNATION	Experimental (Manned Free Balloon)	
	PURPOSE	Exhibition	
B	MANUFACTURER	NAME	N/A
		ADDRESS	N/A
C	FLIGHT	FROM	N/A
		TO	N/A
D	N	878UP	SERIAL NO. A-113
	BUILDER	Jonathan R. Trappe	MODEL c.j. Flying Chair
	DATE OF ISSUANCE	10/1/2009	EXPIRY Unlimited
	OPERATING LIMITATIONS DATED	10/01/2009	ARE PART OF THIS CERTIFICATE
E	SIGNATURE OF FAA REPRESENTATIVE		DESIGNATION OR OFFICE NO.
	James D. Nelson		AEA-F500-39

Any alteration, reproduction or misuse of this certificate may be punishable by a fine not exceeding \$1,000 or imprisonment not exceeding 3 years, or both. THIS CERTIFICATE MUST BE DISPLAYED IN THE AIRCRAFT IN ACCORDANCE WITH APPLICABLE TITLE 14, CODE OF FEDERAL REGULATIONS (CFR).
FAA Form 8130-7 (2009) 3017-10-0101-1000 NOV 2007 3017-10-0101-1000

Vital part in the challenge - it's an FAA Airworthiness Certificate. Thanks to Robin Batchelor for his help.

To sum up, Jonathan did a first class job and with his skills completed a remarkable event. Here we try to convey the essence of his day from various members of his support crew and from the man himself. Congratulations on a great result from all of us on the cloudhopper list to all involved including those unsung Heroes who gave up their time to assist and ensure that Jonathan had the best opportunity to be successful.

Contents

In this 42nd edition I have for your reading the following choice subjects:

- 1, **Ed Speak**- Call me greedy...
- 2, **Essential Extra's** - Introducing the Pulley Pouch
- 3, **The Features Section**-featuring the following submissions:
 - Tim Ward reports on a long memorable day with a 400 mile journey to assist in the attempt.
 - Robin Bachelor gives his view of events.
 - Jonathan Trappe adds detail to the data.
 - XLTA 6
 - My Three favourites and why by Bernie Williams
4. **Updates for the Newsletter/Website/ Forum talk**
5. **Homebuilt Section** - a hint of Paul Stumpf's new hopper

6. Gallery Pages- Another mixed choice of hoppers, selected by your editor

7, Manufacturer News / Events / Updates

- OMM 2010c dates and venue now announced.
- Sackville Hoppers?

8, For Sale /Wanted Section

- G-BVUI LBL 25A Envelope is available to buy.

9, Last and not least.

- Metz Reminder?

1, Ed Speak by Steve Roake - Call me greedy...

Give someone a good time and they always want for more. Last year in its first year of ownership, I managed ten hours in my hopper. Listening recently to friend and Inspector Chris Dunkley speaking about EASA and how its killing off UK flying , he let on that in his business the amount of Private flyers are about 25% less for inspections this year compared to previous times and year on year hours flown by each balloon is now averaging a paltry 6-7 hours. The one overriding thing about Chris is that he is a good guy, highly knowledgeable and definitely with his finger on what's what in ballooning. He recognises that beaurocracy is killing our sport and when grass roots events are staged such as the very popular Sackville Lodge event, not only does he back it (when others doubt its worthiness), he even put his hands in his own pockets and gave a sizable donation to the organisers to assist in their endeavours. Top Man I say!

I digress. Having flown at the Solo Meet, you always strive for more, and so I have taken the view that in recession times and because I love to fly it so much, I would concentrate on getting more use out of my hopper this year and attempt to beat the ten hours achieved last year. This view was rewarded last

time out with an hour and twenty minutes of pure exhilaration on a beautiful flight from West Sussex back towards Surrey overflying stately homes, watching other balloons splash and dash, and getting buzzed by a Spitfire and Hurricane whilst enjoying a balmy summers evening in "Blighty". This weekend was also flyable, any guesses which balloon was prepared first, and subsequently flown?

Steve Roake

2, Essential Extra's- Introducing the "Pulley Pouch"

How many times have you opened the envelope bag and found the pulley has caught material in it and the subsequent cost of repairs? Never? You are lucky! In my case three times on my 90A and I'm fed up with it. So I've come up with a simple solution to recommend to you all that eradicates the risk of this happening. I call it the Pulley Pouch and it should be made out of a luminous material (to be visual in case you forget to remove it prior to flight.) All it is essentially is a bag made oversized with a draw cord that you stuff the pulley into after flying and remove before your next flight as you could inflate. Simple yet effective and it removes the chance of getting caught up. This has been suggested to the major manufacturers with a good reception. So I offer this as a solution to all your balloons whatever the size.

3, The Features Section

My small part in the Cross Channel Cluster flight 29th July 2010- Tim Ward .

Anytime I can get my hands on a toy helium balloon my family know what's going to happen. ("Not again Dad" groan the kids). I then, cut the string down, add some ballast and try to fly the

thing around the room. So, when there was an advert in Aerostat making a request for crew to assist with the launch of Jonathan Trappe's cross channel cluster balloon, I couldn't resist. I have only heard of two or three people in the world who go ballooning in this way.

I am not aware of a man carrying cluster ever being flown free in the UK. Even the Ian Ashpole / Flying pictures flights were tethered to a hot air balloon until high enough and safe enough to be cut free, and landing was by parachute.

So I just had to be there.



A lot of pre planning and logistics had been carried out by Jonathan, Robin Bachelor, Liz Meek & partner Glen. Jonathan and his team stayed at The Kent gliding club which was to be the take off site.

On the day before the launch and due to a glitch in our IT system at work I didn't get notification until I arrived home. The building of the cluster was to start at 2am the next day and be complete at around 5am. I was not well prepared but set out from Annesley (North Notts) at about 6:30pm and arrived at the gliding club at about 10:30pm. I made an attempt to get some sleep before the inflation but couldn't manage it.

Jonathan came into the club house at midnight and decided to start the build straight away due to weather conditions.

Jonathan's team consisted of girlfriend Nidia, Dr Mark Karpel (journalist) and a meteorologist. Jonathan and Nidia provided instruction on filling procedures and how the cluster of 54 balloons was to be put together. They encouraged us to take a break the moment we felt cold or tired as this was meant to be a fun thing to do.

The cluster is put together in sections or tiers. Tier A being the central core, followed by B, B+, C and D. The A to C balloons are made from polyurethane and are reusable; each balloon is attached to a bridle then chord which eventually attaches to a paragliding harness. I thought the karabiners used on hoppers were small but some of the karabiners used on this craft were only slightly bigger than my thumb nail. This makes sense as the individual balloons can only lift a relatively small amount and the karabiners used needed to be as light as possible.

Because we had started early, tiers A, B & C were inflated before 2am and were attached to empty helium cylinders until Jonathan was ready for the final build. From 2am more die hard balloonists started to arrive which made the inflation and attachment of the remaining balloons much quicker.

Once the central core had been attached Jonathan had to be strapped in where he and Nidia directed the attachment procedure and carried out the loading of ballast (reusable sacks of water) and other equipment.

B, B+ and C were attached in order and positioned to create the triangular shape. Initially the cluster was unstable but as more and more balloons were added the stability became stronger and the cluster stood almost upright against the 8 to 10Kt ground level wind.

Finally it was time for the outer balloons, section D to be inflated and attached.



Interesting way the balloons are attached -Ed-jpeg by Tim Ward.

Section D, balloons which are disposable by either cutting away or bursting to lose altitude are made from chloroprene. The balloons are attached via red chord (bowline knot) and two cable ties (zip ties). The red chord is the indicator that these are to be cut away for landing. These balloons are quite big. While

filling these balloons you can feel the immense lift they provide as they try to pull away from you before the fill is complete and the chord is tied. The coldness of the helium passing through the hose and tightness of the grip required to hold the neck of the balloon in place made my hand go numb.



Jonathan Trappe - relaxed and ready prior to launch-jpeg Tim Ward

On completion of final checks the cluster with Jonathan already strapped in was walked to the take position. Weight on weight off procedures were carried out; a kiss from Nidia, the jettison of some water and off he went serenely into the early morning sunshine, to cheers from the enthusiasts on the ground.

The whole thing looked awesome, I'm sure that most of the people who were there were as envious as me.

Jonathan's cluster flew on a track of approximately 95 to 110 degrees which took him out by the port of Dover, over the white cliffs then went over French soil at the lighthouse Dunkirk, landing near Dunkirk. The flight lasted 3Hrs & 16 minutes. From

the point he left land until crossing the beach in France he covered about 40 miles of open water; which took about 1Hr 40 minutes. The track of the flight is available at the following address:-

<http://aprs.fi/?call=KJ4GQV&mt=m&z=11&timerange=86400>

He has initially described the flight as being peaceful, stressful, beautiful, and challenging all at the same time, "an outstanding adventure", which as far as I am concerned is spot on. However I'm sure we will see a full write up in the ballooning press at some point in the future.



Nearly ready to depart- another Tim Ward Jpeg

To sum up my time,

Even though I only had 2 x 20 minute naps during the 24 Hrs (lets here it for Red Bull), driving a 400 mile round trip, this included a 7 hour drive in bank holiday traffic via the M25 to get home. I had a very enjoyable, once in a ballooning life opportunity to get involved in, what was a very rare first. If I was asked would I do it again? Of course I would! Congratulations to Jonathan and the

whole team on this successful crossing of the channel, I was privileged to be part of the build up and witness a very rare attempt - Fantastic!

Tim Ward

English Channel by Cluster Balloon. -Robin Batchelor.

In January this year, I read on the Cloudhopper forum Jonathan Trappe's request for a copy of a UK newspaper which ran a story about his cluster balloon flight in an office chair. I sent him a copy and after reading his comment about one day crossing the English Channel I offered my help.

After many exchanges of email Jonathan flew to the UK to put faces to names, do some aviation shopping and get a glimpse of that iconic ribbon of water that has a powerful effect on pilots to make them want to fly across it.

We met at Booker the day after Transair opened their new shop and immersed ourselves in channel crossing requirements.

Everything from flight plans, maps, launch sites, emergency procedures, customs, crew, met reports etc. which all helped get Jonathan's heart rate back to normal after driving a hire car from Heathrow on the left hand side of the road.

His next port of call was Liz Meek in Kent where she and Glen and his fixed wing friends all contributed more momentum to the whole adventure and helped Jonathan taste the 'can-do' approach that Balloonists in UK have to have with our beloved climate.

And with a long list of names and places and procedures and numbers of threads per inch on UK helium cylinder fittings, Jonathan returned to America with a firm promise to return with his cluster balloons.

And return he did - on 23rd May raring to go. The only thing stopping him was one final document. The CAA had issued an exemption for him, but had to see his insurance before they could

release it. Once that was sorted it was a case of waiting for a North Westerly within cluster balloon limits.

Just five days later saw a bevy of British Balloonists gather at Kent Gliding Club in the dead of night to help inflate the 57 helium balloons needed to lift Jonathan and all his ballast and kit. As I drove into the field I could see 4 brightly coloured met balloons about 4 feet in diameter bobbing about in the wind tied down to a neat row of helium cylinders which BOC had delivered for a reduced rate, and there was Jonathan bobbing about between balloons, cameramen, microphones, laptops and helpful helpers.

Something told me that without the calming presence of his girlfriend Nidia he would have been bobbing about even more. But their teamwork was a pleasure to behold and over the next few hours we managed to inflate all the balloons, tie them onto the correct place without any of them going bang.

As the full moon receded giving way to an orange glow in the clear dawn sky an air of expectancy spread amongst us and grew as the sound of the first media helicopter arrived. Jonathan was sitting comfortably in his seat going through his checklist and Nidia was fetching the laptop to finalise communications and flight details. The wind had been strong enough during the night to give some concern but had now settled to a westerly at about 7 knots and seemed to produce a good effect on the pilot as the SKY TV helicopter circled above and the sun began to warm the helium gas.

Journalists wanted to know whether they should take a ferry to Calais or Boulogne. I told them somewhere in between. How long before take off? 5 minutes I kept telling them until at last the moment came when Jonathan tipped just enough water onto the ground and achieved that perfect state of equilibrium for his 10,000 cu. ft. of helium lifting approximately 650 pounds.

Nidia leant forward and gave him a farewell kiss before he signalled 'Hands Off!' and he gently rose into the sky to the sound of three hearty cheers from the ground crew.

A little more water ballasted and he cleared the trees with ease and headed east at about 7 knots. The pure silent simplicity of a man floating up into the sky beneath a cluster of colourful balloons is nothing short of poetry. It is so 'right', it almost hurts. Ace Kent Balloonist Tony Hill beckoned me over with a wink and his partner Chiralee smiled and proudly produced a cold bottle of champagne. And as the media and chase vehicles all zoomed off for the ferry we raised our glasses to our new brave friend from America and wished him a safe landing.

The story was told well by the world's media and I am glad that more than one mentioned the name of Larry Walters who showed us the way, and was quoted as saying, 'A man can't just sit around.'

Video of the event and more details

http://www.youtube.com/watch?v=2_ZP7G7Dp1cy
www.clusterballoon.com

Jonathan Trappe adds information Bullett points

Cluster Ballooning UK: It's a wrap! Well team, we couldn't have had a greater success: *We accomplished what we set out to do.* We flew The English Channel! I wanted to give one more thank you to the full team, and also share some details about the flight that may be interesting. I'll start with a couple stats about the flight

By the Numbers: The details

Launch: 5:21:17am BST

Crossed the White Cliffs of Dover, at St. Margaret's Bay:
6:30:25am

Made Landfall, at the Lighthouse at Dunkirk: 8:12:05am

Landing Full stop, near Les Moeres, France: 8:43:16am

Time from launch to the coast: ~1hour 9 minutes (5:21:17am -
6:30:25am)

Time across water: 1 hour 42 minutes (6:30:25am - 8:12:05am)

Total flight time: 3hours 22 minutes (5:21:17am - 8:43:16am)

Peak altitude: 7,000 feet

Minimum altitude over water: 321 feet above the waves

Distance covered over open water: 41 miles

Total Distance: 76.2 miles

Worries: One of the questions that I keep getting is if I was worried or afraid; my greatest moments of concern were the day before, when the weather for the inflation was forecast to be right at the limit of what was fun. The team that signed up to be on the airfield didn't sign up for 12 knot inflation! When we got the core of the system inflated, around 12:30am, it leaned over quite a bit; Nidia and I shared a worried glance. But, when we broke up the inflation into individual balloons, it worked out just fine. (Based on our adjusted 'breezy-inflation procedures', next inflation we'll have tie-offs ready on the tanks in advance.) I had a hard time reaching French authorities as I departed UK airspace and entered French airspace. Since flight time, we've made up a new antenna and will test it; with good results, we'll

replace the rubber duck aircraft antenna with this custom-cut aerial.

Please feel free to reach out if you have any questions about our team's flight!

Weather: Our meteorologist, Don Day of Day Weather Services, rocks. I'm going to attach two .kmz files. These open with the free tool, Google Earth. The first file was the forecast trajectories if we flew at 1,000, 2,000, or 3,000 feet. The second file shows my actual, real-world flight path. You can run them both, and they will overlay. Notice how close they are; discuss amongst yourselves. We had rainy weather the day before our launch, lousy weather the day after, and our perfect opportunity to fly the channel on the day we went; special thanks to Don Day.

The CAA: In my opinion, the CAA rocked. From the airworthiness discussions, through to the operations discussions, then the processing of the permissions, the NOTAM, the CAA observer on the airfield, London FIS activating the flight plan--- the CAA rocked this event. Really, three cheers for the CAA; what a great success.

Improvements: We are dedicated to making safe, legal flights. If you have suggestions, please-- PLEASE send them to me! We want to take advantage of the tremendous wealth of knowledge that is in the larger team to make our system the best it can be. Send me your ideas!

Media: We never fly for media. If you don't care about media, skip over this whole bit. However, this flight did generate substantial media interest. The story aired live on national television throughout the day, shot live from a UK ground team,

two helicopters, and another ground team in France. The UK ground team also gave chase, through the tunnel, and to our landing. During the flight, roughly 1 out of every 5 minutes of the news cycle was dedicated to our crossing. At the end of the day, after our flight had completed, Sky News aired a 12-minute special broadcast, which is unprecedented for this major network. In addition, they ran this special feature *twice* Friday night, and again on Saturday evening. The flight was also covered on the major network news in the United States, and around the world. Tell me where YOU saw it; I was in the air! I have no idea who played it on the other side of the planet. The story of the flight appeared in every newspaper in the UK. (Well...every newspaper besides the Sport...which is perhaps for the best.) A sample of the stories is attached. In the States, our beloved National Public Radio ran a lovely little spot that covered the spirit of the flight quite well, in a very succinct little clip, attached. The national public radio program "The Story" has also asked us to come back on to give a follow up story, when we're back in the States. CBS had us on their morning show live on Monday; this was broadcast in every market in the United States. They aired flight footage shot from the helicopter, and then the live interview by satellite with us in London. Sports Illustrated will run the story on the final page of next week's issue. Nidia and I are in London tonight, Thursday evening. Friday morning, ITV, one of the UK national networks, has asked us to chat with them on their morning program. We love ballooning, and our unique form of flight, so we'll do our best to chat up this lovely sport.

The message was overwhelmingly positive; there were lovely stories for our lovely sport. If you have additional media clips, .pdfs, or recorded video, we'd love to see them, and save them for our old age-- which is right around the corner, as it turns out.

Sponsor: The sponsor's logo was aired around the world, in print through the Associated Press stories, and on major network television. The sponsor also has a very nice story for their worldwide, internal audience, and for specialty trade publications.

With good luck, we'll fly under their precious lighter-than-air gas again. We believe this is a very good story for the sponsor, and it bodes well for potential sponsorship for gas ballooning.

Tracking link: If you haven't already seen it, you can track our full flight here:

<http://aprs.fi/?call=KJ4GQV&dt=1275004800&mt=h&z=15&timerange=86400>

Future Plans: Lifting off from the Champs du Mars in Paris, floating past the Eiffel Tower, and out into pastoral France. Ok, this is just a total dream at the moment. But, not long ago, flying the English Channel was also just a total dream.

Jonathan R. Trappe Cluster Balloonist

Later Jonathan sent me an email revealing that he will be writing an article with his views on the flight to be published on clusterballoon.com and will post a link to the cloudhoppers forum.

XLTA 6

The sixth annual XLTA meet took place at Dan Nachbars venue in Amherst Massachusetts in June from the 11th to the 13th.

Following my trip to the equivalent of the OMM stateside last year, like others I was keen to catch up on the happenings over the weekend. Sadly despite my efforts to garner a review of happenings, nobody who attended could be bothered to comment on their weekend activities. This is a shame and doesn't do this

event justice as not only is it an event for hoppers, it also encompasses all things good to do with home building and the spirit I witnessed on my trip from those I met made me look forward doubly to this year's event. Photos have been posted by Noah Forden showing a fair degree of flying took place including a first sight of Paul Stumpf's latest balloon which I hope to have details on next month when Paul has time to put pen to paper. I must say it is very disheartening to get zero input from what is the most prestigious event of the hopper world in the USA, and I would encourage any small writings from anyone who was there to be sent to me for future inclusion.

For a view of all the images from the event, use the links below to access all the jpegs.

<http://www.xlta.org/xltaeast/photos/2010/index.html>

http://picasaweb.google.com/NForden/XLTA10_Noah

Favourite Jpegs and why-choices by Bernie Williams

In this thirteenth selection of my favourites and why, Bernie Williams selects his favourite three photographs with reason why he loves them. Bernie says "I've managed to find time to look out some of my favourite hopper/duo piccys, that you might be able to use, sometime." First up is G- BVCY Cameron H-24.

G-BVCY was taken in Chateau D-Oex Jan 2006. I just love the scenery, and it makes for such a beautiful background. It's nice to see Jon Ruddoni at play, instead of his day job, flying large rides balloons.



PH-SJK was taken at Metz, last year, from the basket of Kevin Tanner's "biggie" (a 77!), and certainly made me smile.



And Bernie's final selection (and please believe me, as I have no influence on anyone's choices-Ed) is an Ultramagic H-31 that just happens to belong to your Editor. Bernie Says, "As for G-UHOP, It's my favourite hopper, as I just enjoy crewing for you - especially when you find somewhere easy to retrieve from!"



Thanks to Bernie Williams for his contributions, however this section always needs more input. Therefore I'm asking for contributions for future editions of my three favourites and why to steve.roake@ntlworld.com please.

4, Updates to the website / Newsletter/ Forum Topics

No great topics of note this month on the forum with traffic slow.

5, Homebuilt section

Homebuilding section received no submissions again this month! But spied on an outing at XLTA 6 was a new hopper for Paul Stumpf. Paul has agreed to write about building it shortly .In the meantime here is a pictorial view of his new craft.



Jpeg care of Noah Forden- very nice too

Like you, I look forward to reading the full story on the making of this fine balloon.

6. Gallery Pages-This section is the Editor's choice of new jpegs, visuals and older balloons of interest or alterations.



G-XAIM Ultramagic H-31 at Aim's Headquarters in central London- many thanks to both Glenn Everett/ Peter Gray for jpegs

This month's Glenn Everett photograph shows the latest addition to his workload. Tethering outside the UK headquarters of AIM the London Stock Exchange, in Mid June, the event created a big stir amongst the brokers arriving in Paternoster Square from 7-10am as apparently only two members knew anything of the purchase prior to the tether.

Another recent addition to the UK register is the return to flying status of G-BWHD the ex Army Air Corps Lindstrand 31A. The balloon never really saw much usage, and has now been registered to Glyn Lewis of Hadleigh Suffolk . Of all the Lindstrand Hoppers built, this one is along with G-OOER (Lbl25A) probably the rarest seen example having only completed 43 hours total since 1995.



G-BWHD LBL 31A -jpeg courtesy of Bill Teasdale.

Next photograph is the first inflation for Eric Jan Dooneward of his new Colt 31A PH-EJC which will be ex HB-BUG when the letters are changed. This represents the bargain of the century and good luck to Eric. I promised not to publically state the price of this system, but you can take it from me (and I always keep a

promise) this represents seriously good value. I hope Eric enjoys his new procession.



HB-BUG - jpeg by Eric Jan Dooneward

There is some talk from Eric and friends to get some Dutch hoppers over for the Icicle meet in January- let's hope this happens.

7, Manufacturer News / Events / Updates

OMM 2010

News of this year's One Man Meet has emerged from host Phil Dunnington. The venue is to be the same as in 2009 at Wookey Somerset. Dates for this year's event are from October 15th-17th inclusive and naturally you can confirm your attendance to Phil via

email at phil@gonewiththewind.uk.com. All I can add is that the area around the Mendips is lovely to fly and out towards Glastonbury was a real pleasure last year.

Sackville Lodge

The organisers of this event have asked me to remind you that hoppers are most welcome at this event. I will naturally be taking mine to this, and would welcome ideas on a theme for us hopper exponents should anyone have a good idea. With the weekend fully action packed, maybe we should allocate a slot in which we concentrate on hopper activities.

8, For Sale /Wanted section

Another month and another story of a fast sale of good used equipment in the second hand marketplace. Tony Bubb successfully sold G-EECO his Lbl 25A with the first person lucky enough to be in the right place at the right time being Tony Jay. Good luck to Tony with the new balloon.

I understand the John Rose Hopper was bought quickly and split down, with the envelope only now up for resale at about £1300.

And Finally.



Metz hopper lineup 2005 -jpeg by Liz Bishop

Membership is currently a healthy 418 members and despite a small dip, numbers are generally still rising. All articles for inclusion in future issues will be gratefully received by your editor. Please forward them to steve.roake@ntlworld.com and feedback good, bad or indifferent is always welcome. Views aired by contributors may not be those of the Editor

Safe and happy hopping! Steve Roake.

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